

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

PRIDE MOBILITY PRODUCTS
CORPORATION,

Plaintiff,

v.

PERMOBIL, INC.,

Defendant.

CIVIL ACTION

No. 2:13-cv-01999-LDD

**DECLARATION OF ANNA BONNY CHAUVET IN SUPPORT OF
DEFENDANT PERMOBIL, INC.'S MOTION TO STAY LITIGATION PENDING
INTER PARTES REVIEW OF U.S. PATENT NOS. 8,408,343 AND 8,408,598,
AND FOR A PROTECTIVE ORDER STAYING DISCOVERY PENDING
THE COURT'S RULING ON DEFENDANT'S MOTION TO STAY**

I, Anna Bonny Chauvet, declare as follows:

1. I am a senior associate at the firm Wilmer Cutler Pickering Hale and Dorr LLP, counsel of record for Permobil, Inc. I am admitted to the bars of the Commonwealth of Virginia and the District of Columbia. I make this declaration of my own personal knowledge.


2. Attached hereto as Exhibit 1 are true and correct copies of the Petitions for *Inter Partes* Review Under 35 U.S.C. §§ 311-318 that Permobil, Inc. filed on July 1, 2013 with the United States Patent and Trademark Office ("PTO") regarding Plaintiff Pride Mobility Products Corporation's U.S. Patent Nos. 8,408,343 and 8,408,598.

3. Attached hereto as Exhibit 2 is a true and correct copy of the PTO's *Inter Partes* Reexamination Filing Data – September 30, 2012, obtained from the PTO's website at http://www.uspto.gov/patents/stats/inter_parte_historical_stats_roll_up_EOY2012.pdf.

4. Attached hereto as Exhibit 3 is a true and correct copy of the PTO's Process Production Report, Preliminary Report, obtained from the PTO's website at http://www.uspto.gov/ip/boards/bpai/stats/process/fy2013_may_b.pdf.

I declare the foregoing is true and correct under penalty of perjury.

Date: July 2, 2013



Anna Bonny Chauvet

Exhibit 1

Filed on behalf of Permobil Inc.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PERMOBIL INC.
Petitioner

v.

Patent Owner of
U.S. Patent No. 8,408,343 to Puskar-Pasewicz et al.

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,408,343
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

TABLE OF CONTENTS

I.	MANDATORY NOTICES	1
A.	Real Party-in-Interest	1
B.	Related Matters	1
C.	Counsel.....	2
D.	Service Information.....	2
II.	CERTIFICATION OF GROUNDS FOR STANDING	2
III.	OVERVIEW OF CHALLENGE AND RELIEF REQUESTED	2
A.	Prior Art Patents and Printed Publications.....	3
B.	Grounds for Challenge	4
IV.	LEGAL PRINCIPLES.....	4
V.	CLAIM CONSTRUCTION	6
VI.	OVERVIEW OF THE ‘343 PATENT	6
A.	State of the Art of Wheelchairs in 2005.....	7
B.	The ‘343 Patent Claims	9
C.	Summary of the Prosecution History of the ‘343 Patent	12
VII.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	14
A.	The Primary References	14
1.	Mulhern ‘715	14
2.	Goertzen	15
3.	Fought	15
B.	The Low Pivot References	17

VIII. IDENTIFICATION OF HOW THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	18
A. Independent Claim 1	18
1. Claim 1 is Unpatentable over Mulhern ‘715	19
2. Claim 1 is Unpatentable over Mulhern ‘715 in View of Any One of the Low Pivot References	24
3. Claim 1 is Unpatentable over Goertzen in View of Any of the Low Pivot References.....	34
4. Claim 1 Is Unpatentable over Fought in View of Any of the Low Pivot References.....	39
B. The Dependent Claims Are Unpatentable	46
1. Claim 2 is Unpatentable over Mulhern ‘715 in View of Hosino, Goertzen in View of Hosino, or Fought in View of Hosino	47
2. Claim 3 is Unpatentable over Mulhern ‘715 in View of Hosino, Goertzen in View of Hosino, or Fought in View of Hosino	48
3. Claim 4 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in View of Any of the Low Pivot References, or Fought in View of Any One of the Low Pivot References	49
4. Claim 5 is Unpatentable over Goertzen in View of Any of the Low Pivot References.....	51
5. Claim 6 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in View of Any of the Low Pivot References, or Fought in View of Any of the Low Pivot References	52

U.S. Patent 8,408,343
Petition for *Inter Partes* Review

6.	Claim 7 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, or Goertzen in View of Any of the Low Pivot References.....	53
7.	Claim 8 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in View of Any of the Low Pivot References, or Fought in View of Any of the Low Pivot References	54
8.	Claim 9 is Unpatentable over Goertzen in View of Any of the Low Pivot References.....	56
9.	Claim 10 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in Vie of Any of the Low Pivot References, or Fought in View of Any of the Low Pivot References	57

TABLE OF AUTHORITIES

	Page(s)
CASES	
<i>Pride Mobility Products Corp. v. Permobil, Inc.</i> , No. 2:13-cv-01999-LDD (E.D. Pa. filed 4/15/2013).....	1
<i>Pride Mobility Products Corp. v. Permobil, Inc.</i> , No. 2:12-cv-03931 (E.D. Pa.).....	1
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	4
<i>In re ICON Health and Fitness, Inc.</i> , 496 F.3d 1374 (Fed. Cir. 2007)	6
<i>KSR Int’l Co. v. Teleflex, Inc.</i> , 550 U.S. 398 (2007).....	4, 5
<i>Rockwell Int’l Corp.v. United States</i> , 147 F.3d 1358 (Fed. Cir. 1998)	4
STATUTES	
35 U.S.C. § 102(a)	3
35 U.S.C. § 102(b)	3, 7
35 U.S.C. § 103	4, 5
35 U.S.C. § 112	6
35 U.S.C. § 314(a)	4
OTHER AUTHORITIES	
Rule 42.22(a)(1)	2
Rule 42.100(b)	6

U.S. Patent 8,408,343
Petition for *Inter Partes* Review

Rule 42.104(a).....	2
Rule 42.104(b)(1)-(2).....	2
Rule 42.104(b)(4)-(5).....	18
77 Fed. Reg. 48764 (Aug. 14, 2012)	6
IPR2013-00126, Paper No. 10, Decision Instituting <i>Inter Partes</i> Review	13

I. MANDATORY NOTICES

A. Real Party-in-Interest

Permobil Inc. (“Petitioner”) is the real party-in-interest and submits this *inter partes* review Petition (“Petition”) for review of certain claims of U.S. Patent No. 8,408,343 (the “’343 patent”).

B. Related Matters

The following litigation matter would affect or be affected by a decision in this proceeding: *Pride Mobility Products Corp. v. Permobil, Inc.*, No. 2:13-cv-01999-LDD (E.D. Pa. filed 4/15/2013). The litigation involves two patents: the ‘343 patent and U.S. Patent No. 8,408,598 (the “’598 patent”). The parent patent of the ‘598 patent – U.S. Patent No. 8,181,992 (the “’992 patent”) – is the subject of an *inter partes* reexamination proceeding, Control No. 95/002,355.¹ The claims of the ‘343 patent are the subject of this Petition. A separate petition for *inter partes* review of the ‘598 patent is being filed concurrently with this petition. Because the technology and disclosure in the patents are similar and for the sake of administrative efficiency and consistent outcome, Petitioner requests that the

¹ The ‘992 patent is also the subject of a district court litigation—*Pride Mobility Products Corp. v. Permobil, Inc.*, No. 2:12cv03931 (E.D. Pa.)—that is currently stayed pending the outcome of the *inter partes* reexamination proceeding.

Patent Trial and Appeals Board (“PTAB”) have a single Administrative panel address these two *inter partes* reviews.

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II. CERTIFICATION OF GROUNDS FOR STANDING

Petitioner certifies pursuant to Rule 42.104(a) that the patent for which review is sought is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this Petition.

III. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

Pursuant to Rules 42.22(a)(1) and 42.104(b)(1)-(2), Petitioner challenges claims 1-10 of the ‘343 patent (Ex. 1001).

A. Prior Art Patents and Printed Publications

Petitioner relies upon the following patents and printed publications:

1. U.S. Patent Application Publication No. 2005/0077715 (“Mulhern ‘715”; Ex. 1002), which has a filing date of October 8, 2004, and is prior art to the ‘343 patent under 35 U.S.C. § 102(a).
2. International Publication No. WO 02/34190 (“Goertzen”; Ex. 1003), which was published on May 2, 2002, and is prior art to the ‘343 patent under 35 U.S.C. § 102(b).
3. U.S. Patent Application Publication No. 2003/0075365 (“Fought”; Ex. 1004), which was published on April 24, 2003, and is prior art to the ‘343 patent under 35 U.S.C. § 102(b).
4. U.S. Patent No. 6,454,286 (“Hosino”; Ex. 1005), which issued on September 24, 2002 and is prior art to the ‘343 patent under 35 U.S.C. § 102(b).
5. U.S. Patent Application Publication No. 2003/0205420 (“Mulhern ‘420”; Ex. 1006), which was published on November 6, 2003, and is prior art to the ‘343 patent under 35 U.S.C. § 102(b).
6. Japanese Patent No. JP 2001104391 (“Harakawa”; Ex. 1007), which was published on April 17, 2001, and is prior art to the ‘343 patent under 35 U.S.C. § 102(b).

B. Grounds for Challenge

Petitioner requests cancellation of claims 1-10, the challenged claims, as unpatentable under 35 U.S.C. § 103.

This Petition, supported by the declaration of Dr. Mark Richter (“Richter Declaration” or “Richter Decl.”; Ex. 1008) filed with this Petition, demonstrates that there is a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims and that each of the challenged claims is unpatentable for the reasons cited in this petition. *See* 35 U.S.C. § 314(a).

IV. LEGAL PRINCIPLES

The challenged claims are unpatentable because they are obvious under 35 U.S.C. § 103. A claim is invalid if it would have been obvious—that is,

if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which [the] subject matter pertains.

35 U.S.C. § 103; *see also Rockwell Int’l Corp. v. United States*, 147 F.3d 1358, 1364 (Fed. Cir. 1998).

In *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 415 (2007), the U.S. Supreme Court addressed the issue of obviousness and provided an “expansive and flexible” approach that is consistent with the “broad inquiry” set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). According to the Supreme

Court, a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton,” *KSR*, 550 U.S. at 421, and “in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle,” *id.* at 420. The Court held that

[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under [35 U.S.C.] § 103.

Id. at 421. Thus, *KSR* focused on whether a combination of known elements could be patentable if it yielded predictable results. The Court’s guidance was clear: it may not. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. Further, “[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* at 417.

The Board must ask, as guided by *KSR*, whether the challenged claims recite an improvement that is “more than the predictable use of prior art elements according to their established functions.” *Id.* at 417. The Board should conclude, based on the information in this Petition, that the challenged claims are merely a

predictable combination of known elements that are used according to their established functions, and that they are therefore unpatentable, and an *inter partes* review of the challenged claims should therefore be instituted.

V. CLAIM CONSTRUCTION

A claim in *inter partes* review is given the “broadest reasonable construction in light of the specification.” 37 C.F.R. § 42.100(b). Any claim term which lacks a definition in the specification is therefore also given a broad interpretation. *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). For the purposes of this proceeding, claim terms are to be given their broadest reasonable interpretation in light of the specification as commonly understood by those of ordinary skill in the art. Moreover, should the Patent Owner, in order to avoid the prior art, contend that the claims have a construction different from their broadest reasonable construction, the appropriate course is for the Patent Owner to seek to amend the claims to expressly correspond to its contentions in this proceeding. *See* 77 Fed. Reg. 48764 (Aug. 14, 2012). Any such amendment would only be permissible if the proposed amended claims comply with 35 U.S.C. §112.

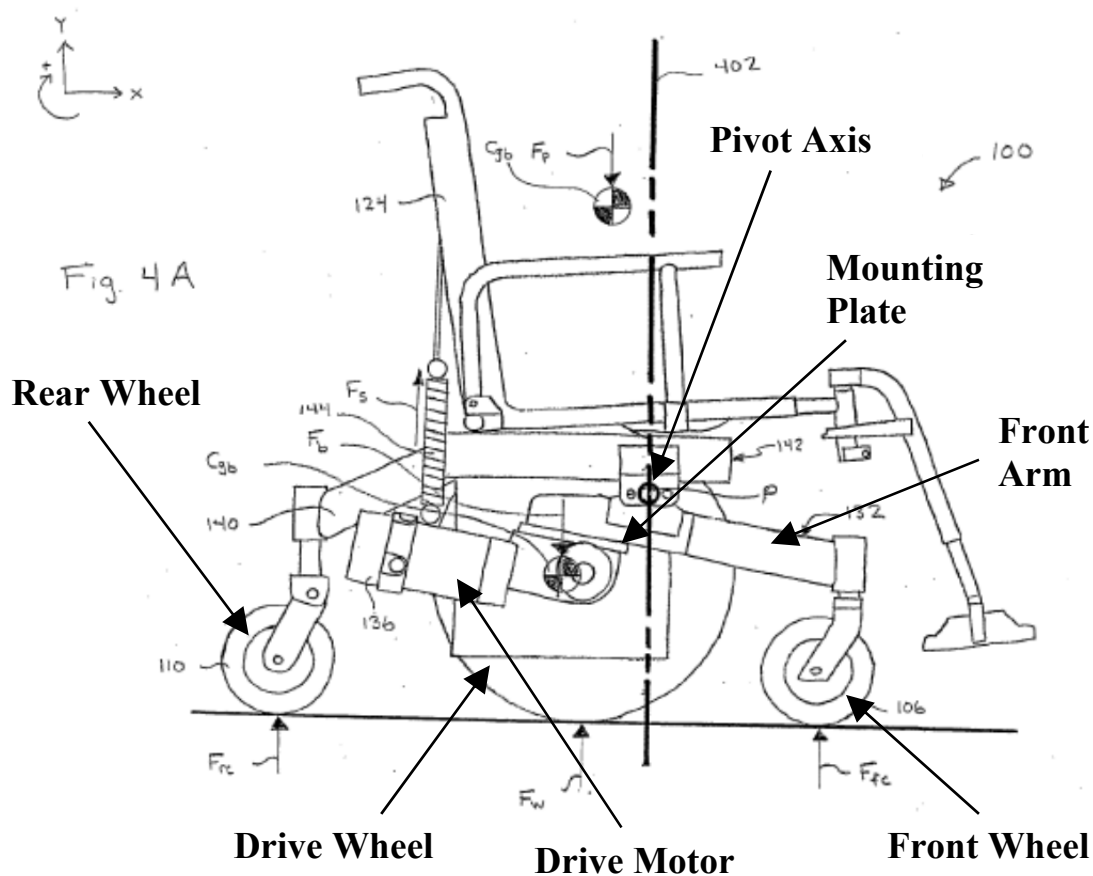
VI. OVERVIEW OF THE ‘343 PATENT

The application that issued as the ’343 patent (Ex. 1001) was filed on October 22, 2012, and is a continuation of U.S. Patent No. 8,292,010, which was filed on June 24, 2010, which is a continuation of U.S. Patent No. 7,766,106,

which was filed on July 14, 2006. The '343 patent claims priority to provisional application nos. 60/699,201, filed on July 14, 2005, and 60/727,537, filed on October 27, 2005.

A. State of the Art of Wheelchairs in 2005

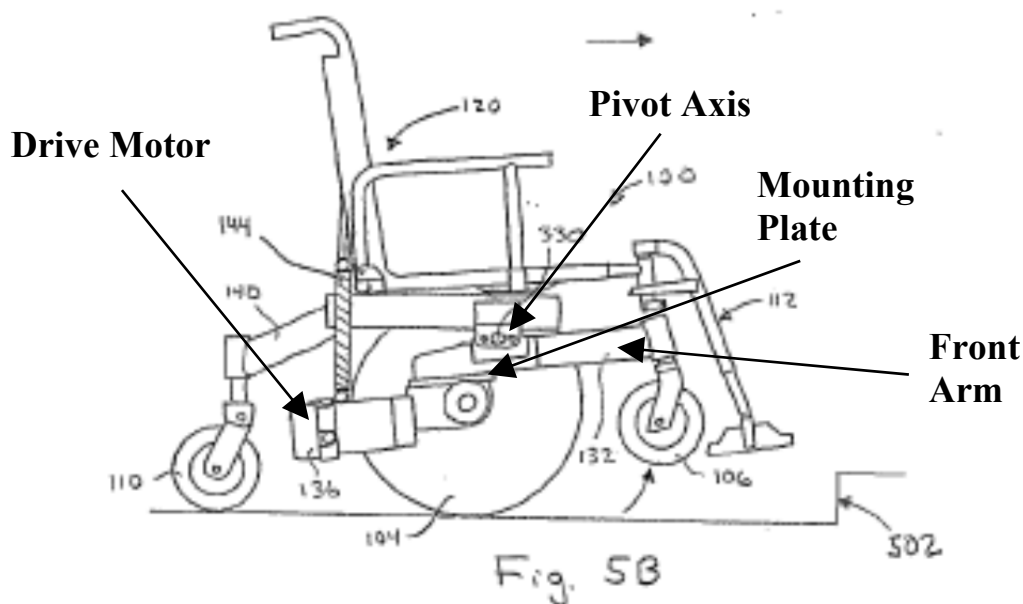
Powered wheelchairs having a frame, main drive wheels, front anti-tip or caster wheels, and rear wheels were well-known in the art at the time to which the '343 patent claims priority (*i.e.*, 2005). *See* Richter Decl. ¶ 14 (Ex. 1008). Goertzen, which was published in 2002, illustrates a powered wheelchair having these features, as is shown in Figure 4A:



Goertzen, Figure 4A (Prior Art) (Ex. 1003)

By 2005, persons of skill in the art had long used drive assemblies to power wheelchairs. These drive assemblies were routinely pivotally coupled to wheelchair frames at a pivot axis. *See* Richter Decl. ¶ 15 (Ex. 1008). Goertzen again provides an example of such a configuration in Figure 4A, above.

It was also well known in the art to rigidly extend a front arm from a mounting plate so that the drive, the mounting plate, and the front arm pivoted together about the pivot axis. *See* Richter Decl. ¶ 16 (Ex. 1008). Again, Goertzen (in Fig. 5B, below) shows these three components rigidly attached together and pivoting around a pivot axis:

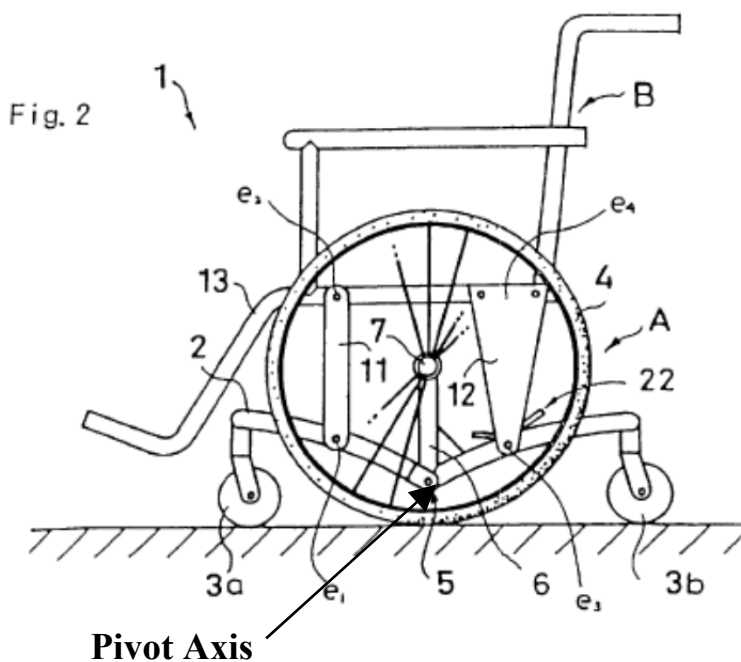


Front wheels that raised vertically in response to motor torque applied to the drive wheels were also known in the art. *See* Richter Decl. ¶ 17 (Ex. 1008).

Goertzen, for example, shows this feature in Figure 5B, above.

It was also well known in the art that a pivot axis could be placed at various locations on a wheelchair. Wheelchairs with a relatively high pivot axis, such as the chair in Goertzen, were known. *See* Richter Decl. ¶ 18 (Ex. 1008).

Wheelchairs with a relatively low pivot axis, such as the chair in Hosino Figure 2 (shown below), were also known.



Hosino, Figure 2 (Prior Art) (Ex. 1005)

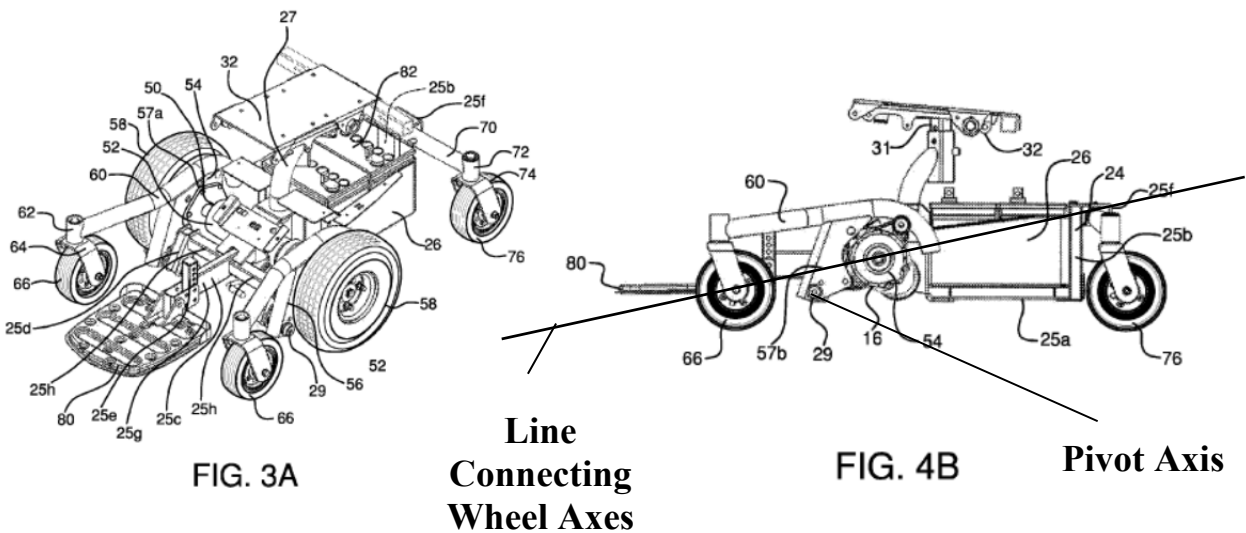
B. The '343 Patent Claims

The ‘343 patent does nothing more than describe and claim a combination of these same old features. *See* Richter Decl. ¶ 19 (Ex. 1008). The ‘343 patent

describes a powered wheelchair having a pair of drive wheels, a pair of rear wheels, and a pair of front wheels. *See, e.g.*, ‘343 patent, Abstract (Ex. 1001). The patent provides a drive assembly for powering the drive wheels and a front arm assembly that is coupled to the front wheels and is rigidly attached to a mounting plate. *See, e.g., id.* (Ex. 1001). The drive assembly, mounting plate, and front arm assembly are configured to pivot together about a pivot axis. *See, e.g., id.* 3:5-7, 8:58-67, Fig. 3B (Ex. 1001). The patent provides that the pivot axis is located at a point that is below a line connecting the front wheel axis and the drive wheel axis. *See, e.g., id.* 10:60-63 (Ex. 1001). The patent also provides that the front caster wheels are urged upwards when torque is applied to the drive wheels and the wheels are placed against a curb. *See, e.g., id.* 11:2-14 (Ex. 1001).

Figures 3A and 4B, reproduced below, illustrate an embodiment of the wheelchair described in the ‘343 patent. In Figure 4B, a line connecting the front wheel axis and the drive wheel axis has been drawn over the figure to show the relative location of the pivot axis (i.e., below-the-line). The ‘343 patent states that the inventors “believe that it is advantageous for pivot axis height H2 to be approximately below a line drawn between the drive wheel axis and axis of rotation of front caster 66,” although the patent does not give any specific reasons for placing the pivot axis below this particular line. Instead, the patent states that low pivot axes in general were known in the art and “may have been disfavored”

for several reasons, but that they are desirable in the present invention because they create “an upward ... force vector” on the front wheels that “may be helpful for ascending especially high obstacles.”² See ’343 patent, col. 10, l. 54-col. 11, l. 14; col. 11, l. 55-col. 12, l. 11 (Ex. 1001).



‘343 Patent, Figures 3A and 4B (Ex. 1001)

The claimed wheelchair is merely the combination of known elements from existing wheelchairs where each element performs as expected and the combination yields predictable results. See Richter Decl. ¶ 21 (Ex. 1008). As

² As will be explained below in Section VIII.A.2.a), it was well known in the art that wheelchairs with low pivot axes provided greater upward force vectors on the front wheels than wheelchairs with higher pivot axes, and thus were better at ascending obstacles. See, e.g. Hosino 6:50-65, Figs. 11-12 (Ex. 1005).

shown by the Exhibits and the Richter Declaration, the claimed wheelchair would have been obvious to a person of ordinary skill in the art.

C. Summary of the Prosecution History of the ‘343 Patent

The claims of the ‘343 patent were allowed based on an error by the Examiner regarding the disclosure in the Fought reference. After rejecting the pending claims as obvious over Fought in view of Harakawa (*see* ‘343 Patent File History, 12/26/2012 Non-Final Office Action (Ex. 1011)), the Examiner “agreed” with the Patent Owner that Fought did not disclose a front arm that rigidly extended from the mounting plate. *See* ‘343 Patent File History, 1/22/2013 Applicant-Initiated Interview Summary (Ex. 1009). This, however, was a mistake—Fought clearly teaches a rigidly-extending front arm in the *second* embodiment of the reference, as is demonstrated in the chart below comparing the Patent Owner’s claim amendment (with new claim language underlined) (*see* ‘343 Patent File History, 1/11/2013 Amendment and Response at 2 (Ex. 1010)) with the disclosure of Fought.

<u>1/11/13 Claim 1 Amendment</u>	<u>Disclosure in <i>Fought</i></u>
a forward-extending arm <u>rigidly</u> extending from the mounting plate <u>such</u> <u>that the mounting plate, drive, and front</u> <u>arm are together configured to pivot</u> <u>about the pivot axis</u>	Illustrated in FIG. 7 is a side elevational view of a second embodiment of the present invention. The second embodiment differs from the first in that the drive assembly 202 and the pivot

U.S. Patent 8,408,343
Petition for *Inter Partes* Review

	<p>arm 208 are rigidly coupled together.</p> <p>That is, the drive assembly 202 does not pivot independently of pivot arm 208.</p> <p>Fought ¶ [0031] (Ex. 1004) (emphases added).</p>
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The very limitations added to the claims to distinguish Fought during prosecution are explicitly disclosed in Fought. Had the Examiner considered the plain language of Fought, he could not have properly allowed the claims as Fought clearly teaches the claim limitations added to overcome the reference. The Board has acknowledged that although prior consideration by examiners of a claim feature based on the same or similar prior art should be considered, “the patent owner should not expect that the Board necessarily would come to the same conclusion.” *See* IPR2013-00126, Paper No. 10, Decision Instituting *Inter Partes* Review, at 26.

Furthermore, the Patent Owner did not argue that Fought and Harakawa failed to disclose any of the other elements of the claims. Moreover, if the Examiner had all of the art presented here before him during prosecution, even with the amendment, he never would have had a basis to allow these claims to issue.

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

The challenged claims recite features long known by persons of skill in the art in the field of wheelchair design. *See* Richter Decl. ¶¶ 19-21 (Ex. 1008). The purported invention is a combination of known features, all of which were well known to those skilled in the art before and at the time to which the ‘343 patent claims priority. In the claimed combinations, the structures all have known functions that perform in expected ways. *See id.* ¶ 21 (Ex. 1008). Based on the prior art cited above and described below, the claimed limitations of the alleged invention perform known functions with an expected result.

The prior art falls into two categories: (1) the primary references (Mulhern ‘715, Goertzen, and Fought); and (2) prior art references that disclose or make obvious the claimed pivot point that is located below a straight line between the front wheel axis and the drive wheel axis (Hosino, Mulhern ‘420, and Harakawa, *i.e.*, the “Low Pivot References”). The Low Pivot References also teach, make obvious, and provide one of ordinary skill in the art with ample reason and motivation to place a front arm pivot point below this line between the wheel axes.

A. The Primary References

1. Mulhern ‘715

Mulhern ‘715 teaches a powered wheelchair having a frame, a pair of main drive wheels, a drive-train assembly that provides power to the main drive wheels,

a pair of front suspension arms with anti-tip or caster wheels on the ends, and a pair of mounting brackets pivotally coupled to the frame at a pivot axis. *See, e.g.*, Mulhern '715 Fig. 5, 6, ¶ [0033] (Ex. 1002). Mulhern '715 also discloses that the front wheels raise off the ground in response to acceleration of the drive wheels, and the drive-train assembly, mounting bracket, and front arm all pivot around the pivot axis together. *See, e.g., id.* Figs. 4, 7, ¶¶ [0038]-[0039], [0045]-[0047] (Ex. 1002).

2. Goertzen

Goertzen teaches a powered wheelchair having a frame, a pair of main drive wheels, a drive assembly with a motor to drive the main drive wheels, a pair of front arms with front caster wheels attached at the ends, and a pair of mounting brackets pivotally coupled to the frame. *See, e.g.*, Goertzen Fig. 4A; p. 5, l. 12-p. 6, l. 15 (Ex. 1003). Goertzen further teaches a mechanism for raising the front caster wheels when the chair accelerates, and lowering the front caster wheels when the chair decelerates. *See, e.g., id.* Figs. 4B, 4C, p. 8, l. 23-p. 9, l. 18 (Ex. 1003).

3. Fought

Fought teaches a powered wheelchair having a suspension system for traversing obstacles and rough terrain. *See, e.g.*, Fought Abstract (Ex. 1004). Fought discloses a wheelchair having a frame, a pair of main drive wheels, a drive

assembly for driving the main wheels, a pair of front pivot arms with front caster wheels, and a mounting bracket pivotally coupled to the frame at a pivot axis. *See, e.g., id.* Figs. 3, 4A, ¶¶ [0022]-[0026] (Ex. 1004). Fought further teaches a mechanism for raising the front caster wheels when the chair accelerates, wherein the drive assembly, mounting bracket, and front arm together pivot about the pivot axis. *See, e.g., id.* Fig. 4A, ¶ [0029] (Ex. 1004).

As discussed *supra* in Section VI.C, during prosecution of the ‘343 patent, the Examiner allowed the claims based on an apparent error regarding the disclosure of the Fought reference. After rejecting the pending claims as obvious over Fought in view of Harakawa, the Examiner agreed with the Patent Owner that Fought did not disclose a front arm that rigidly extended from the mounting plate. *See* ‘343 Patent File History, 1/22/2013 Applicant-Initiated Interview Summary (Ex. 1009). Fought, however, does teach a front arm that rigidly extends from a mounting plate—the second embodiment disclosed in Fought “differs from the first in that the drive assembly 202 and the pivot arm 208 are ***rigidly coupled together***. That is, the drive assembly 202 ***does not pivot independently*** of pivot arm 208.” *See* Fought ¶ [0031], (Ex. 1004) (emphases added). The very limitation added to the claims to distinguish Fought during prosecution is explicitly disclosed in Fought.

B. The Low Pivot References

Hosino (Ex. 1005), Mulhern '420 (Ex. 1006), and Harakawa (Ex. 1007), *i.e.*, the “Low Pivot References,” disclose and/or render obvious the limitation requiring the front arm pivot to be below a line connecting the front wheel axis and the drive wheel axis.

Hosino discloses a powered wheelchair with a loop frame having a pair of drive wheels, a front caster wheel, a rear caster wheel, a front arm to which the front caster wheel is attached, and an arm pivot that is located below a straight line drawn between the front caster wheel axis and the drive wheel axis. *See* Hosino Figs. 1-2, 3:58-4:23 (Ex. 1005). Hosino specifically states that it is preferable that the arm pivot be “positioned generally as high as a center O₂ of the front caster.” *See id.* 4:18-23 (Ex. 1005).

Mulhern '420 discloses a powered wheelchair having a pair of drive wheels, a pair of front anti-tip wheels, a pair of rear caster wheels, a pair of front arms to which the front anti-tip wheels are attached, and a pair of front arm pivots that are located below a straight line drawn between the front wheel axis and the drive wheel axis. *See Mulhern '420* Fig. 1, ¶¶ [0022] (Ex. 1006).

Harakawa discloses a powered wheelchair with a pair of drive wheels, a pair of front caster wheels, a pair of rear caster wheels, a pair of front arms to which the front caster wheels are attached, and a pair of front arm pivots that are

located below a straight line drawn between the front wheel axis and the drive wheel axis. *See Harakawa* Fig. 1, Abstract (Ex. 1007).

VIII. IDENTIFICATION OF HOW THE CHALLENGED CLAIMS ARE UNPATENTABLE

Pursuant to Rule 42.104(b)(4)-(5), specific grounds identified below and discussed in the Richter Declaration show in detail the prior art disclosures that render the challenged claims unpatentable.

A. Independent Claim 1

Challenged claim 1 requires a wheelchair including: (a) a frame; (b) a drive wheel defining a drive wheel axis, (c) a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis; (d) a drive operatively coupled to the drive wheel and affixed to the mounting plate; (e) a forward-extending front arm rigidly extending from the mounting plate such that the mounting plate, drive, and front arm are together configured to pivot about the pivot axis; (f) a front wheel rotatably coupled to the front arm, the front wheel defining a front wheel axis, (g) wherein a vertical position of the pivot axis with respect to the ground plane is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground; and (h) whereby motor torque biases

the front wheel. All of the features of claim 1 are shown in the prior art. *See* Richter Decl. ¶ 23 (Ex. 1008).

1. Claim 1 is Unpatentable over Mulhern ‘715

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Mulhern ‘715.

Mulhern ‘715 discloses a wheelchair frame, as required by limitation 1(a). Specifically, Mulhern ‘715 teaches a main structural frame 3. *See, e.g.,* Mulhern ‘715 ¶ [0033] (Ex. 1002). Mulhern ‘715 also discloses a drive wheel defining a drive wheel axis, as required by limitation 1(b). Specifically, Mulhern ‘715 teaches a pair of drive wheels 6. *See, e.g.,* Mulhern ‘715 ¶ [0033]. As is illustrated by Mulhern ‘715, wheelchair frames and drive wheels were well known in the art. *See* Richter Decl. ¶ 25 (Ex. 1008).

Mulhern ‘715 also discloses a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis, as required by limitation 1(c). Mulhern ‘715 teaches an upper mounting plate 58. *See, e.g.,* Mulhern ‘715 ¶ [0038]. As can be seen in Figure 5, reproduced below, mounting plate 58 is pivotally coupled to the frame 3 at pivot 8, and the pivot 8 is positioned forward of the drive wheel axis P_A. *See, e.g.,* Mulhern ‘715 Fig. 5, ¶ [0033] (Ex. 1002). As Mulhern ‘715 illustrates, wheelchairs having mounting

plates pivotally coupled to the frame at a pivot axis that is positioned forward of the drive wheel axis were well known in the art. *See* Richter Decl. ¶ 26 (Ex. 1008).

Mulhern '715 further discloses a drive operatively coupled to the drive wheel and affixed to the mounting

plate, as required by claim

limitation 1(d). As can also be seen

in Figure 5, Mulhern '715 teaches a

drive-train assembly 7 that is

affixed to mounting plate 58 and is

operatively coupled to drive wheel

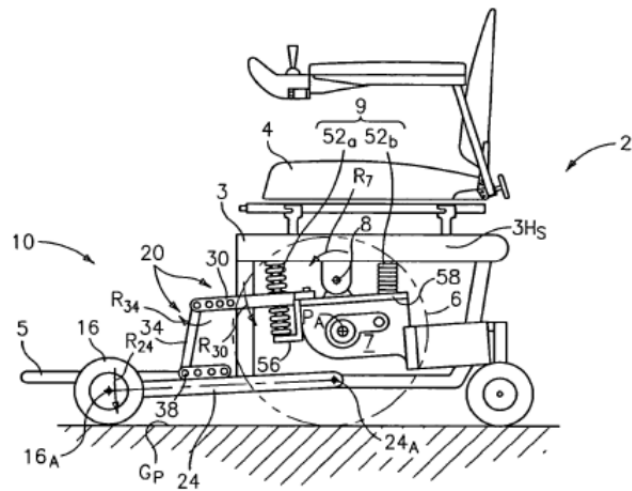


FIG. 5

6 to power the drive wheel. *See,*

Mulhern ‘715, Figure 5 (Ex. 1002)

e.g., Mulhern ‘715 Fig. 5, ¶¶

[0033], [0037] (Ex. 1002). Thus, as Mulhern ‘715 demonstrates, wheelchairs with

a drive affixed to a mounting plate and operatively coupled to a drive wheel were

well known in the art. *See* Richter Decl. ¶ 27 (Ex. 1008).

Mulhern '715 also teaches a forward-extending front arm rigidly extending

from the mounting plate such that the mounting plate, drive, and front arm are

together configured to pivot about the pivot axis, as required by claim limitation

1(e). As illustrated in Figure 5 above, Mulhern ‘715 teaches a forward-extending

front bracket 30 rigidly extending from the mounting plate 58: “[A] bracket 30 is

Rotation of the drive-train assembly 7 will cause the bracket 30 to rotate in the same clockwise direction” *See, e.g.*, Mulhern ‘715 Fig. 4, ¶ [0038] (Ex. 1002). This is illustrated in Figure 4.



Mulhern '715, Figure 4 (Ex. 1002)

Mulhern '715 further discloses a front wheel rotatably coupled to the front arm, the front wheel defining a front wheel axis, as is required by claim limitation 1(f). Mulhern '715 teaches a front anti-tip wheel 16 with a front wheel axis 16_A that is coupled to front arm bracket 30 through link 20 and suspension arm 24.

See, e.g., Mulhern ‘715 Fig. 5, ¶ [0034] (Ex. 1002). Wheelchairs having front wheels rotatably coupled to front arms were known in the art, as Mulhern ‘715 illustrates. *See* Richter Decl. ¶ 29 (Ex. 1008).

Mulhern ‘715 also teaches a wheelchair where motor torque biases the front wheel, as is required by claim limitation 1(h). Mulhern ‘715 discloses a front wheel 16 that raises in response to torque applied by the drive assembly 7:

“Referring to FIG. 4, in an operational mode requiring increased torque output, such as may be required when accelerating or climbing a curb and/or obstacle, the drive-train assembly 7 rotates in a clockwise direction about pivot 8 Rotation of the drive-train assembly 7 will cause the bracket 30 to rotate in the same clockwise direction, see arrow R_{30} , and the link 34 to move in a counterclockwise direction, see arrow R_{34} , about pivot 42. ... The link 34 rotates the suspension arm 24 in a clockwise direction about pivot 24_A , denoted by arrow R_{24} , and lifts or raises the anti-tip wheel 16.” *See, e.g.*, Mulhern ‘715 Fig. 4, ¶ [0038] (Ex. 1002).

Wheelchairs where motor torque biases the front wheel were well known in the art, as Mulhern ‘715 shows. *See* Richter Decl. ¶ 30 (Ex. 1008).

Mulhern ‘715 does not explicitly teach a vertical position of the pivot axis with respect to the ground plane that is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as is required by claim

limitation 1(g). This limitation, however, would have been obvious to a person of ordinary skill in the art based on the disclosure in Mulhern ‘715. *See* Richter Decl. ¶ 31(Ex. 1008). Low pivot axes were known in the art, and others have stated the advantages of locating a pivot axis in a low position. Hosino, for example, states that “it is particularly preferable that the bending portion 5 [pivot axis] is positioned generally as high as a center O₂ of the front caster” and that locating the pivot axis at a lower vertical location results in a larger upward vertical force component for the front caster wheel.³ *See* Hosino 4:21-23; 6:50-65 (Ex. 1005).

Further, the ‘343 patent itself acknowledges that “low pivots may have been disfavored because of the need for clearance over the ground,” suggesting that low pivot axes were in fact already known in the art. *See* ‘343 patent 11:59-64 (Ex. 1001). As Dr. Richter explains in his declaration, the precise location of the pivot axis would have been a routine design choice that a person of ordinary skill in the art would have made during the normal course of designing a wheelchair. The placement of the pivot axis below a line connecting the front wheel axis and the drive wheel axis would have yielded predictable results. *See* Richter Decl. ¶ 32 (Ex. 1008).

In addition, Mulhern ‘715 teaches a second pivot point 24_A that is located below a line connecting the front wheel axis and the drive wheel axis, to which

³ See Section VIII.A.2.a), *infra*, for a complete discussion of Hosino.

suspension arm 24 is attached. *See, e.g.*, Mulhern ‘715 Figs. 4, 5, ¶ [0034] (Ex. 1002). It would have been obvious for a person of skill in the art to locate the first pivot 8 at the location of second pivot 24A, *i.e.*, below a line connecting the front wheel axis and the drive wheel axis. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Further, as just explained, others have stated that locating a pivot axis in a relatively low position is preferred and makes it easier for the front wheels to overcome obstacles. *See, e.g.*, Hosino 4:21-23; 6:50-65 (Ex. 1005). Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 33 (Ex. 1008).

2. Claim 1 is Unpatentable over Mulhern ‘715 in View of Any One of the Low Pivot References

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Mulhern ‘715 combined with any of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

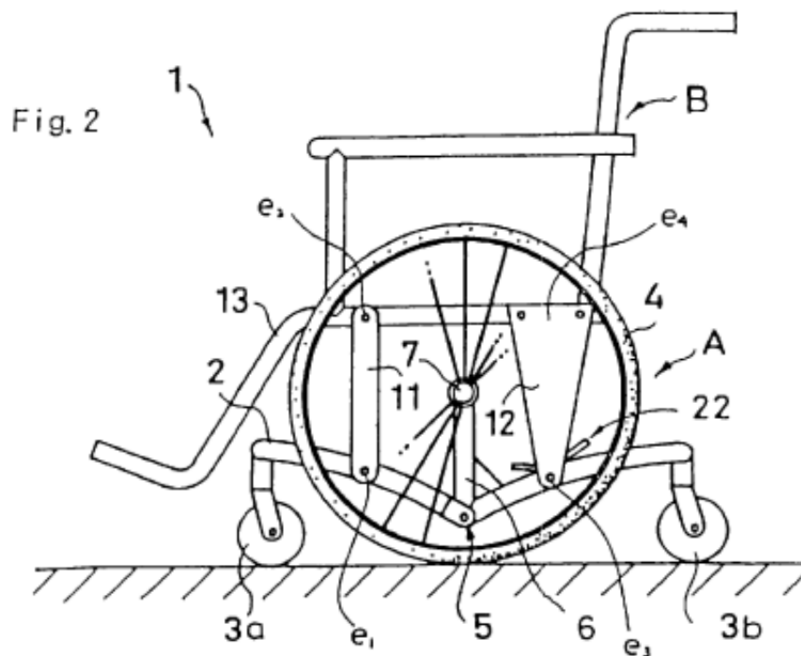
As explained *supra* in Section VIII.A.1, Mulhern ‘715 discloses all of the limitations of claim 1 except for a vertical position of the pivot axis with respect to the ground plane that is spaced from and positioned relatively below a line drawn

between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as is required by claim limitation 1(g). The Patent Owner may argue that Mulhern '715 lacks a specific disclosure of a below-the-line pivot axis limitation. As discussed below, the Low Pivot References render obvious this claim limitation. *See* Richter Decl. ¶¶ 34-35 (Ex. 1008).

a) Claim 1 is Obvious over Mulhern '715 in View of Hosino

Claim 1 is obvious over Mulhern '715 in view of Hosino. Hosino discloses a wheelchair with a vertical position of the pivot axis with respect to the ground plane that is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as claim limitation 1(g) requires. Hosino discloses a wheelchair 1 with a loop frame 2 having a caster wheel 3a on the front end of the frame and a caster wheel 3b on the rear end of the frame, as well as two large driving wheels 4. *See, e.g.*, Hosino 3:35-41 (Ex. 1005). The loop frame 2 has a bendable portion 5, which allows the side frame to bend upward or downwards. *See id.* 3:41-45 (Ex. 1005). "The front half-frame 2a has a pair of rear end portions furcating like a two-prong fork in which the respective front end portion of the rear half-frame 2b is connected by means of a pivot or any other suitable method so as to form the bendable portion 5 which is allowed to bend upwardly and

downwardly.” *Id.* 3:66-4:5 (Ex. 1005). Figure 2, reproduced below, shows the loop frame 2 with pivot point 5.



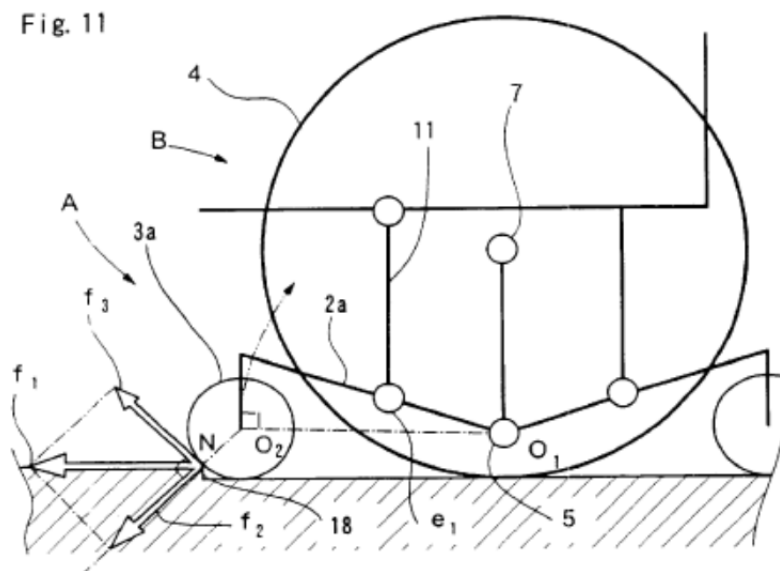
Hosino, Figure 2 (Ex. 1005)

As can be seen from Figure 2 above, pivot point 5 is positioned below a line drawn between the axis of castor wheel 3a and drive wheel axis 7. Hosino also describes the bendable portion 5 as “located in a relatively low position” and further states that “it is particularly preferable that the bending portion 5 is positioned generally as high as a center O_2 of the front caster.” *See id.* 4:14-15, 21-23 (Ex. 1005).

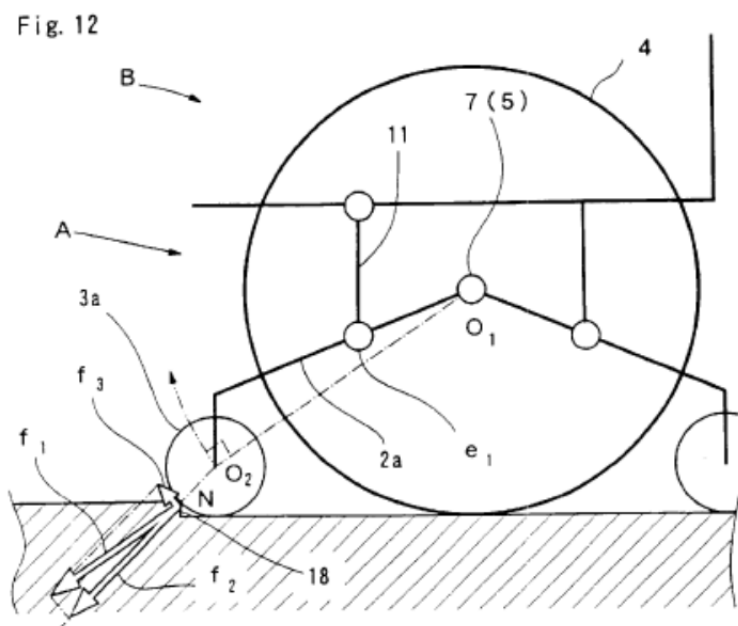
Hosino further provides a reason for locating the front arm pivot point at a relatively low position:

As FIG. 11 and FIG. 12 show, when the front caster 3a is pressed against the projection 18, the front caster receives a pressing force f_1 which works parallel to a line O_1O_2 connecting the rotation center O_1 of the front-half frame 2a and the rotation center O_2 of the front caster. The pressing force f_1 can be divided into a component f_2 parallel to a line O_2N connecting the center O_2 of the front caster and a point N of contact to the projection, and a component f_3 vertical to the same. Only the component f_3 vertical to the line O_2N is effective for the front caster 3a to ride over the projection. In the structure according to the FIG. 11, the rotation center O_1 of the front-half frame is positioned lower than the rotation axis 7 of the driving wheel, such that the vertical component f_3 in FIG. 11 is larger than that in FIG. 12, such that a load for running over the projection getting smaller in the former case.

See id. 6:50-65 (Ex. 1005). Figures 11 and 12 are reproduced below:



Hosino, Figure 11 (Ex. 1005)



Hosino, Figure 12 (Ex. 1005)

Hosino discloses a wheelchair with an arm pivot axis that is below the line connecting the front wheel axis and the drive wheel axis when the wheels are on the ground, as claim limitation 1(g) requires. *See* Richter Decl. ¶ 39 (Ex. 1008). Thus, Hosino discloses an arm pivot axis with a vertical position that meets claim limitation 1(g). Together, Mulhern ‘715 and Hosino disclose all the elements of claim 1. Mulhern ‘715 discloses a powered wheelchair with a mounting plate pivotally coupled to the frame at a pivot axis, a drive affixed to the mounting plate, a forwardly-extending front arm, and a front wheel rotatably coupled to the front arm, whereby motor torque lifts the front wheel. Hosino discloses a powered

wheelchair with a front wheel and a front arm that pivots around a pivot point that is below a line drawn between the axis of the front caster wheel and the axis of the drive wheel.

It would have been obvious for one of ordinary skill in the art to position the pivot axis of the front arm in the Mulhern '420 wheelchair below a line connecting the front wheel axis and the drive wheel axis. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line, or below the line – and choosing one of these three options in the course of designing a wheelchair would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 40 (Ex. 1008).

b) Claim 1 is Obvious over Mulhern '715 in View of Mulhern '420

Claim 1 is obvious over Mulhern '715 in view of Mulhern '420.⁴ Mulhern '420 discloses a powered wheelchair with front anti-tip wheels. *See* Mulhern '420 Abstract (Ex. 1006). Mulhern '420 discloses a wheelchair with a vertical position of the pivot axis with respect to the ground plane that is spaced from and

⁴ Mulhern '420 differs from Hosino and Harakawa in that there is a relatively more complete illustration of the motor and drive assembly in Mulhern '420.

positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as claim limitation 1(g) requires. As shown in Figure 1, Mulhern '420 discloses a wheelchair 10 having a forwardly extending arm 24 that is pivotally connected to frame 60 by a bolt 32, and

a wheel 22 that is connected to the front arm 24, where the pivot point is located below a line drawn between the axis of the front wheel 22 and the axis of main drive wheel

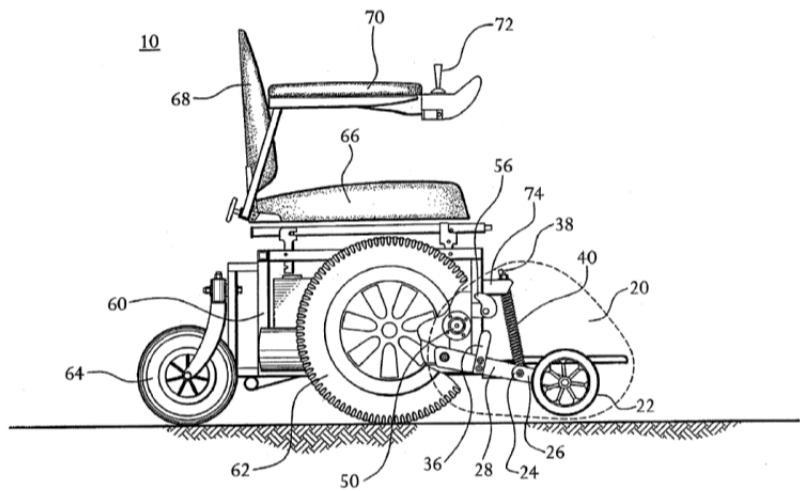


FIG. 1

62. *See id.* ¶ [0022], Fig. 2 (Ex. 1006).

Mulhern '420, Figure 1 (Ex. 1006)

Mulhern '420 further explains that front wheel 22 can be lowered to the ground: “Anti-tip wheels assembly 20 further comprises a mechanism for lowering arm 24 and wheel 22. ... In this embodiment, the lowering mechanism is capable of holding wheel 22 in a near ground position As used herein, near ground position is understood to include a ground engaging position wherein the wheel 22 is in contact with the ground.” *See id.* ¶ [0024] (Ex. 1006). A person of skill in the

art would understand that when the front wheel depicted in Figure 1 is lowered to the ground, the front arm pivot point would remain below a line drawn between the front wheel axis and the drive wheel axis. *See* Richter Decl. ¶ 42 (Ex. 1008).

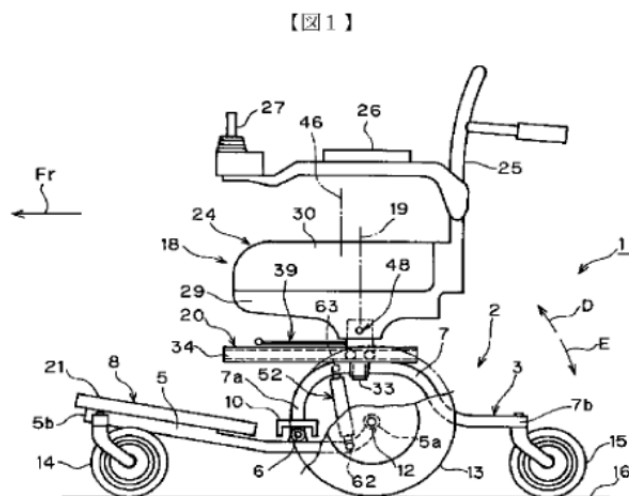
Mulhern ‘420 discloses a wheelchair with an arm pivot axis that is below the line connecting the front wheel axis and the drive wheel axis when the wheels are on the ground, as claim limitation 1(g) requires. *See* Richter Decl. ¶ 43 (Ex. 1008). Thus, Mulhern ‘420 discloses an arm pivot axis with a vertical position that meets claim limitation 1(g). Together, Mulhern ‘715 and Mulhern ‘420 disclose all the elements of claim 1. Mulhern ‘715 discloses a powered wheelchair with a mounting plate pivotally coupled to the frame at a pivot axis, a drive affixed to the mounting plate, a forwardly-extending front arm, and a front wheel rotatably coupled to the front arm, whereby motor torque lifts the front wheel. Mulhern ‘420 discloses a powered wheelchair with a front anti-tip wheel and a front arm that pivots around a pivot point that is below a line drawn between the axis of the front wheel and the axis of the drive wheel.

It would have been obvious for one of ordinary skill in the art to position the pivot axis of the front arm in the Mulhern ‘715 wheelchair below a line connecting the front wheel axis and the drive wheel axis as is taught by Mulhern ‘420. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line,

or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 44 (Ex. 1008).

c) Claim 1 is Obvious over Mulhern ‘715 in View of Harakawa

Claim 1 is obvious over Mulhern ‘715 in view of Harakawa.⁵ Harakawa discloses a wheelchair with a vertical position of the pivot axis with respect to the ground plane that is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as claim limitation 1(g) requires. As shown in Figure 1, Harakawa teaches a wheelchair 1 having a front arm 5 that is pivotally connected to frame 7a at pivot point 6, and a front caster wheel 14 that is connected to the front



Harakawa, Figure 1 (Ex. 1007)

⁵ Harakawa differs from Mulhern ‘420 in that there is an illustration in Harakawa of a low pivot axis with a front caster wheel.

arm 5, where the pivot point is located below a line drawn between the axis of the front wheel 14 and the axis 12 of main drive wheel 13. *See id.* Fig. 1 (Ex. 1007).

Harakawa discloses a wheelchair with a pivot axis that is below the line connecting the front wheel axis and the drive wheel axis when the wheels are on the ground, as claim limitation 1(g) requires. *See* Richter Decl. ¶ 46 (Ex. 1008). Thus, Harakawa discloses an arm pivot axis with a vertical position that meets claim limitation 1(g). Together, Mulhern ‘715 and Harakawa disclose all the elements of claim 1. Mulhern ‘715 discloses a powered wheelchair with a mounting plate pivotally coupled to the frame at a pivot axis, a drive affixed to the mounting plate, a forwardly-extending front arm, and a front wheel rotatably coupled to the front arm, whereby motor torque lifts the front wheel. Harakawa discloses a powered wheelchair with a front wheel and a front arm that pivots around a pivot point that is below a line drawn between the axis of the front wheel and the axis of the drive wheel.

It would have been obvious for one of ordinary skill in the art to position the pivot axis of the Mulhern ‘715 wheelchair below a line connecting the front wheel axis and the drive wheel axis, as is taught in Harakawa. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of

ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 47 (Ex. 1008).

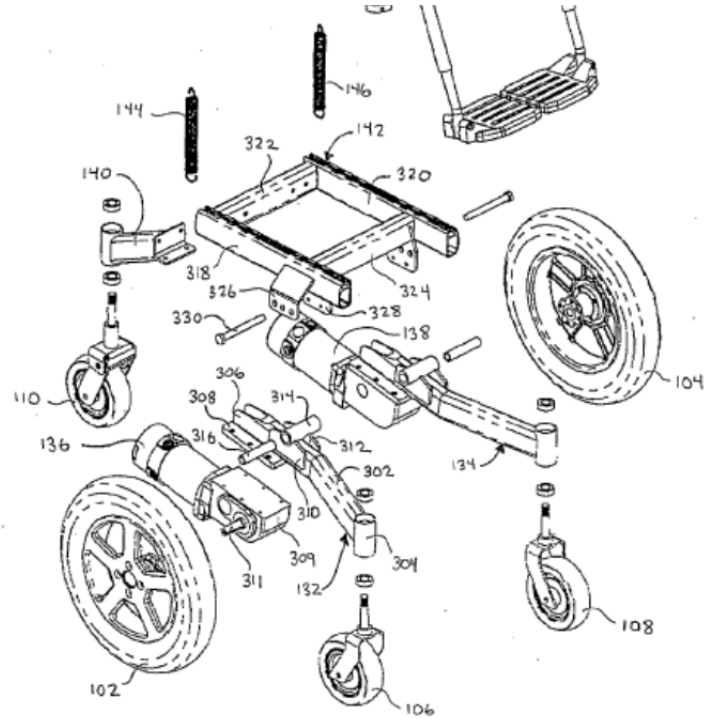
3. Claim 1 is Unpatentable over Goertzen in View of Any of the Low Pivot References

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Goertzen combined with any of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

Goertzen discloses a wheelchair frame, as required by limitation 1(a). Goertzen teaches a wheelchair 100 with a chair 120 that is adjustably mounted to frame 142. Goertzen p. 5, ll. 21-24 (Ex. 1003). Goertzen also teaches, “Springs 144 and 146 are coupled to the arms 132 and 134 and the frame 142.” *Id.* p. 6, l. 16 (Ex. 1003). Goertzen also discloses a drive wheel defining a drive wheel axis, as required by limitation 1(b): “The wheelchair 100 has a pair of drive wheels 102 and 104.” *See id.*, p. 5, ll. 13-14 (Ex. 1003). As is illustrated by Goertzen, wheelchair frames and drive wheels were well known in the art. *See* Richter Decl. ¶ 49 (Ex. 1008).

Goertzen further discloses a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis, as required by limitation 1(c).

As shown in Figure 3,
Goertzen teaches a mounting
plate 308 that is pivotally
mounted to the wheelchair
frame 142 through a pivot
mounting structure that
includes brackets 310 and



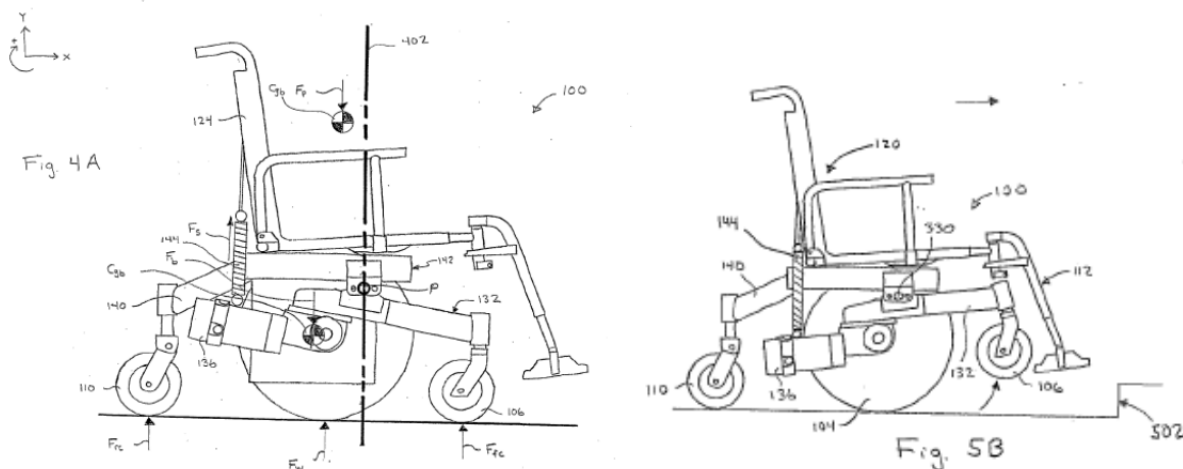
Goertzen, Figure 3 (partially reproduced) (Ex. 1003)

312, sleeve 314, and pin 330. *See id.*, Fig. 3, p. 6, ll. 4-6 (Ex. 1003). Figure 4A, also shown below, shows the pivot axis P positioned forward of the drive wheel axis. *See id.*, Fig. 4A (Ex. 1003). Wheelchairs with mounting plates pivotally coupled to the frame were known in the art. *See Richter Decl.* ¶ 50 (Ex. 1008).

Goertzen also teaches a drive operatively coupled to the drive wheel and affixed to the mounting plate, as required by claim limitation 1(d). “A pair of drive motors 136 and 138 and gearboxes are used to power drive wheels 102 and 104.” *See id.* p. 6, ll. 4-5 (Ex. 1003). “Base member 306 has attached thereto a mounting

plate 308 for mounting drive motor 136 and gearbox assembly 309.” *See id.* p. 7, ll. 6-8 (Ex. 1003). As Goertzen illustrates, wheelchairs with drives coupled to the drive wheels and affixed to a mounting plate were also known in the art. *See* Richter Decl. ¶ 51 (Ex. 1008).

Goertzen further discloses a forward-extending front arm rigidly extending from the mounting plate such that the mounting plate, drive, and front arm are together configured to pivot about the pivot axis, as required by claim limitation 1(e). As can be seen in Figure 4A, shown below, the Goertzen wheelchair has a forward-extending front arm 132 rigidly extending from the mounting plate 308: “Drive motor 136 is coupled to pivot arm 132 through gearbox assembly 309 and mounting plate 308.” *See id.* Fig. 4A, p. 7, ll. 8-9 (Ex. 1003). Further, as can be seen in Figure 5B, shown below, Goertzen teaches a wheelchair where the mounting plate 308, drive 136, and front arm 132 pivot about the pivot axis P. *See, e.g., id.* Fig. 5B, p. 10, ll. 11-24 (Ex. 1003). As Goertzen illustrates, wheelchairs with front arms rigidly extending from a mounting plate such that the drive, mounting plate, and front arm pivot about a pivot axis were known in the art. *See* Richter Decl. ¶ 52 (Ex. 1008).



Goertzen, Figures 4A and 5B (Ex. 1003)

Goertzen also teaches a front wheel rotatably coupled to the front arm, the front wheel defining a front wheel axis, as required by claim limitation 1(f).

Figure 4A, reproduced above, shows a front caster wheel 106 coupled to the front arm. *See, e.g., id.* Fig. 4A, p. 6, l. 11 (Ex. 1003). Wheelchairs with front wheels rotatably coupled to a front arm were known in the art. *See Richter Decl.* ¶ 53 (Ex. 1008).

Goertzen also discloses motor torque that biases the front wheel, as required by claim limitation 1(h). Goertzen teaches, “Nevertheless, in Figure 5B from preferably a standstill position, drive motors 136 and 138 are ‘torqued’ so as to cause pivot arms 132 and 134 to pivot about, for example, pin or bolt 440 and raise front casters 106 and 108 off the ground. ... As shown in Figure 5B and described in connection with Figures 4A-4C, such ‘torquing’ causes pivot arms 132 and 134 to pivot about pin 330 thereby causing front casters 106 and 108 to rise.” *See id.*,

p. 10, ll. 11-22 (Ex. 1003). Figure 5B, reproduced above, shows the front arm 132 pivoted around pivot point 330, causing front caster 106 to raise vertically off the ground. As Goertzen illustrates, wheelchairs where motor torque biases the front wheel were known in the art. *See* Richter Decl. ¶ 54 (Ex. 1008).

Goertzen, however, does not disclose a vertical position of the pivot axis with respect to the ground plane that is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as is required by claim limitation 1(g). As discussed above in Sections VIII.A.2.a)-VIII.A.2.c), the Low Pivot References disclose or render obvious a pivot axis that is below the line connecting the drive wheel axis and the caster wheel axis. *See* Richter Decl. ¶ 55 (Ex. 1008).

It would have been obvious for one of ordinary skill in the art to position the pivot axis in the Goertzen wheelchair below a line connecting the front wheel axis and the drive wheel axis. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 56 (Ex.

1008). Therefore, claim 1 is unpatentable over Goertzen in view of any one of the Low Pivot References.

4. Claim 1 Is Unpatentable over Fought in View of Any of the Low Pivot References

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Fought combined with any of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

Fought discloses a wheelchair frame, as required by limitation 1(a). Specifically, Fought teaches a wheelchair 100 having a frame 206. *See, e.g.*, Fought Fig. 2, ¶ [0021] (Ex. 1004). Fought also discloses a drive wheel defining a drive wheel axis, as required by limitation 1(b). Specifically, Fought teaches a wheelchair 100 having drive wheels 104 and 106. *See, e.g., id.* Fig. 2, ¶ [0021] (Ex. 1004). As is illustrated by Fought, wheelchair frames and drive wheels were known in the art. *See* Richter Decl. ¶ 58 (Ex. 1008).

Fought further discloses a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis, as required by limitation 1(c). Fought specifically teaches a pivotal mounting bracket 318, describing it as “a U-shaped bracket having spaced apart longitudinal members 319 joined by a mid-section at one of their ends.” *See, e.g.*, Fought p. 2, ¶ [0024], Fig. 3 (Ex. 1004). Fought further teaches that “[t]his entire assembly is

then pivotally secured with a pin or bolt 334 that passes through the mounting bracket 303, drive

assembly 202 bracket

318, and pivot arm

208 mounting tube

310.” *See, e.g., id.* ¶

[0026], Fig. 3 (Ex.

1004). Figure 4A,

reproduced below,

shows the mounting

bracket 318 connected to the frame at pivot point P, and further shows that the

pivot P is positioned forward of the drive wheel axis. Wheelchairs having

mounting plates pivotally coupled to the frame at a pivot axis positioned forward

of the drive wheel axis were known in the art, as exemplified by Fought. *See*

Richter Decl. ¶ 59 (Ex. 1008).

Fought also teaches a drive operatively coupled to the drive wheel and affixed to the mounting plate, as required by claim limitation 1(d). Fought specifically states, “Drive assembly 202 preferably has a motor-gearbox sub-assembly for driving one of the drive wheels and a pivotal mounting bracket 318.

... Pivotal mounting bracket 318 is in the form of a U-shaped bracket having

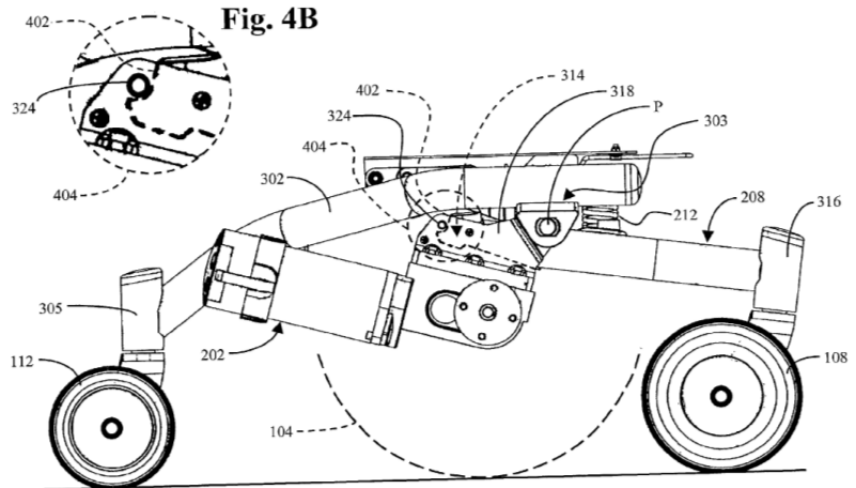


Fig. 4A

Fought, Figure 4A (Ex. 1004)

spaced apart longitudinal members 319 joined by a mid-section at one of their ends. The mid-section is preferably used for mechanically attaching the motor/gearbox sub-assembly.” *See, e.g.*, Fought ¶ [0024], Fig. 3 (Ex. 1004). Figure 4A, reproduced above, shows drive assembly 202 affixed to mounting bracket 318. As Fought clearly demonstrates, wheelchairs having a drive operatively coupled to a drive wheel and affixed to a mounting plate were known in the art. *See* Richter Decl. ¶ 60 (Ex. 1008).

Fought further discloses a forward-extending front arm rigidly extending from the mounting plate such that the mounting plate, drive, and front arm are together configured to pivot about the pivot axis, as required by claim limitation 1(e). Fought teaches that front pivot arm 208 and drive assembly 202 are rigidly coupled and that they pivot together: “[T]he drive assembly 202 and the pivot arm 208 are rigidly coupled together. That is, the drive assembly 202 does not pivot independently of pivot arm 208.” *See, e.g.*, Fought ¶ [0031], Fig. 7 (Ex. 1004). The drive assembly 202 and pivot arm 208 are affixed to one another through pivotal mounting bracket 318 and pivot arm engagement interface 314 using a permanently welded or fastened pin 702, and pivot arm 208 forwardly extends from the mounting bracket 318. *See, e.g., id.* (Ex. 1004). As Fought illustrates, wheelchairs having a forward-extending front arm rigidly extending from a

mounting plate such that the plate, drive, and arm pivot together were known in the art. *See* Richter Decl. ¶ 61 (Ex. 1008).

Again, as discussed *supra* in Section VI.C, during prosecution of the ‘343 patent, the Examiner allowed the claims based on an error regarding the Fought reference. After rejecting the pending claims as obvious over Fought in view of Harakawa, the Examiner agreed with the Patent Owner that Fought did not disclose a front arm that rigidly extended from the mounting plate. *See* ‘343 Patent File History, 1/22/2013 Applicant-Initiated Interview Summary (Ex. 1009). Fought, however, does teach a front arm that rigidly extends from a mounting plate—the second embodiment disclosed in Fought “differs from the first in that the drive assembly 202 and the pivot arm 208 are ***rigidly coupled together***. That is, the drive assembly 202 ***does not pivot independently*** of pivot arm 208.” *See* Fought ¶ [0031], (Ex. 1004) (emphases added). The very limitation added to the claims to distinguish Fought during prosecution is explicitly disclosed in Fought, and thus Fought does teach this limitation of claim 1. Notably, the Patent Owner did not argue that Fought did not disclose any other limitations of claim 1.

Fought also teaches a front wheel rotatably coupled to the front arm, the front wheel defining a front wheel axis, as required by claim limitation 1(f). Figure 4A, reproduced above, shows a front caster wheel 108 rotatably coupled to the pivot arm 208. *See, e.g.*, Fought Fig. 4A, ¶ [0023] (Ex. 1004). Wheelchairs

with front wheels rotatably coupled to a front arm were known in the art. *See* Richter Decl. ¶ 62 (Ex. 1008).

Fought also discloses motor torque that biases the front wheel, as required by claim limitation 1(h). “Illustrated in FIG. 5 is an elevational view of the suspension of wheelchair 100 traversing over an obstacle 500 by ascending the obstacle. This operating condition is accomplished by either rapidly accelerating wheelchair 100 in the forward direction or directly driving front caster 108 over obstacle 500. ... This causes drive assembly 202 to pivot counter-clockwise around pivot P. ... Hence, engagement interfaces 314 and 324 translate the pivotal motion of drive assembly 202 to pivot arm 208 to thereby raise front caster 108 to traverse obstacle 500.” *See, e.g.*, Fought ¶ [0029], Fig. 5 (Ex. 1004). As Fought illustrates, wheelchairs where motor torque biases the front wheel were known in the art. *See* Richter Decl. ¶ 63 (Ex. 1008).

Fought, however, does not disclose a vertical position of the pivot axis with respect to the ground plane that is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, as is required by claim limitation 1(g). As discussed above in Sections VIII.A.2.a)-VIII.A.2.c), the Low Pivot References render obvious a pivot axis that is below the line connecting the drive wheel axis and the caster wheel axis. *See* Richter Decl. ¶ 64 (Ex. 1008).

It would have been obvious for one of ordinary skill in the art to position the pivot axis in the Fought wheelchair below a line connecting the front wheel axis and the drive wheel axis. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 65 (Ex. 1008). In fact, during prosecution of the ‘343 patent, the Examiner agreed that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fought by further locating the pivot axis as disclosed by Harakawa in order to ensure the comfort of riding on a wheel chair. *See* ‘343 Patent File History, 12/26/2012 Non-Final Rejection at 3 (Ex. 1011). Therefore, claim 1 is unpatentable over Fought in view of any one of the Low Pivot References.

In summary, the chart below identifies where the above prior art references disclose and/or make obvious the limitations of claim 1 of the ‘343 patent.

<u>Claim 1: A wheelchair comprising:</u>	<i>See, e.g.,</i> Mulhern ‘715 abstract, Fig. 2 (Ex. 1002); Goertzen abstract, cl. 1, Fig. 1, 2:4-5, 5:12-15 (Ex. 1003); Fought ¶ [0021]; Fig. 1 (Ex. 1004); Hosino abstract, 1:50-55, Fig. 1 (Ex. 1005); Mulhern ‘420 abstract, Fig. 1 (Ex. 1006);
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	Harakawa abstract; ¶¶ [0001], [0011]; Fig. 1 (Ex. 1007).
(a) a frame;	<i>See, e.g.</i> , Mulhern '715 abstract; ¶¶ [0009], [0033], [0043], Figs. 2, 6 (Ex. 1002); Goertzen p. 2, ll. 15-17, 26-28; p. 5, ll. 21-24; p.6, ll. 13-20; p. 12, l. 30-p. 13, l. 2 (Ex. 1003); Fought abstract; ¶¶ [0007],[0021]; Fig. 2 (Ex. 1004); Hosino 5:18-35, Fig. 1 (Ex. 1005); Mulhern '420 abstract, ¶ [0019] (Ex. 1006); Harakawa abstract; ¶¶ [0001]; [0011], [0016], Fig. 1 (Ex. 1007).
(b) a drive wheel defining a drive wheel axis;	<i>See, e.g.</i> , Mulhern '715 ¶¶ [0033], [0035], Figs. 2, 6 (Ex. 1002); Goertzen p. 2, ll. 21-22, p. 3, ll. 22-27, p. 5, ll. 13-14, p. 12, ll. 22-23, p. 13, ll. 3-7, 10-12, Figs. 1, 3 (Ex. 1003); Fought ¶¶ [0020]-[0021], [0024]; Figs. 1, 2 (Ex. 1004); Hosino abstract; 3:39-41; 7:25-26; Figs. 1, 13, 14 (Ex. 1005); Mulhern '420 ¶¶ [0020], [0051], Fig. 1 (Ex. 1006); Harakawa ¶ [0017]; Fig. 1 (Ex. 1007).
(c) a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis;	<i>See, e.g.</i> , Mulhern '715 ¶¶ [0037]-[0038], [0044]-[0045], Figs. 5, 8 (Ex. 1002); Goertzen p. 7, ll. 5-12, p. 14, ll. 9-15, Figs. 3, 4A, 9A, 10A (Ex. 1003); Fought ¶¶ [0024]-[0026]; Figs. 2, 3, 4A (Ex. 1004).
(d) a drive operatively coupled to the drive wheel and affixed to the mounting plate;	<i>See, e.g.</i> , Mulhern '715 ¶¶ [0033], [0037], Figs. 2-8, (Ex. 1002); Goertzen p. 2, ll. 21-22, p. 6, ll. 4-6; p. 7, ll. 6-12; p. 13, ll. 11-2; p. 14, ll. 9-15, Figs. 3, 9A (Ex. 1003); Fought ¶ [0024]; Figs. 3, 4A (Ex. 1004).
(e) a forward-extending front arm rigidly extending from the mounting plate such that the mounting plate, drive, and front arm are together configured to pivot about the pivot axis;	<i>See, e.g.</i> , Mulhern '715 ¶¶ [0036], [0038], [0040], Figs. 2-5 (Ex. 1002); Goertzen p. 2, ll. 17-19, p. 7, ll. 4-9; p. 10, ll. 11-24; Figs. 3, 4A, 5B (Ex. 1003); Fought ¶¶ [0019], [0021], [0031]-[0032]; Fig. 7 (Ex. 1004).

(f) a front wheel rotatably coupled to the front arm, the front wheel defining a front wheel axis,	<i>See, e.g.</i> , Mulhern ‘715 ¶¶ [0034], [0036], Figs. 2-5 (Ex. 1002); Goertzen p. 2, ll. 19-20; p. 6, l. 11; p. 13, l. 19; Figs. 3, 9A (Ex. 1003); Fought ¶¶ [0020]-[0021], Fig. 4A (Ex. 1004); Hosino 3:58-4:23; 6:50-7:9; Figs. 1-7, 9, 11 (Ex. 1005); Mulhern ‘420 ¶¶ [0022]-[0026]; Figs. 1-3 (Ex. 1006); Harakawa abstract; ¶¶ [0016]-[0017], Fig. 1 (Ex. 1007).
(g) wherein a vertical position of the pivot axis with respect to the ground plane is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground, and	Hosino 3:58-4:23; 6:50-7:9; Figs. 1-7, 9, 11 (Ex. 1005); Mulhern ‘420 ¶¶ [0022]-[0026]; Figs. 1-3 (Ex. 1006); Harakawa abstract; ¶¶ [0016]-[0017], Fig. 1 (Ex. 1007).
(h) whereby motor torque biases the front wheel	<i>See, e.g.</i> , Mulhern ‘715 ¶¶ [0038], [0040], Fig. 4 (Ex. 1002); Goertzen p. 2, ll. 22-25, p. 3, ll. 7-14, p. 8, l. 23 – p. 9, l. 8, p. 9, ll. 14-16; p. 10, ll. 11-24, p. 16, ll. 11-26, p. 18, ll. 1-14; Figs. 5B, 11B (Ex. 1003); Fought ¶¶ [0019], [0029], [0032]; Figs. 5, 8 (Ex. 1004); Hosino 6:44-49, Fig. 9 (Ex. 1005).

B. The Dependent Claims Are Unpatentable

Each of the dependent claims discussed below is directed to subsidiary features of the claimed wheelchair, and it would be obvious to add their respective limitations to the independent claims.

1. Claim 2 is Unpatentable over Mulhern ‘715 in View of Hosino, Goertzen in View of Hosino, or Fought in View of Hosino

Claim 2 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 2 is obvious over Mulhern ‘715 in view of Hosino, Goertzen in view of Hosino, or Fought in view of Hosino.

Claim 2 recites a forward-extending front arm that is void of a biasing member that is configured to provide a downward force on the forward-extending front arm. Hosino teaches a wheelchair having a forward-extending front arm 2 that does not have a biasing member acting on it. *See, e.g.*, Hosino Fig. 1 (Ex. 1005).

Because wheelchairs with a forward-extending front arm that is void of a biasing member that is configured to provide a downward force on the arm were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 70 (Ex. 1008). Accordingly, claim 2 is not patentable.

Claim 2: The wheelchair of claim 1, wherein the forward-extending front arm is void of a biasing member that is configured to provide a downward force on the forward-extending front arm.	<i>See, e.g.</i> , Hosino Fig. 1 (Ex. 1005).
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2. Claim 3 is Unpatentable over Mulhern '715 in View of Hosino, Goertzen in View of Hosino, or Fought in View of Hosino

Claim 3 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 3 is obvious over Mulhern '715 in view of Hosino, Goertzen in view of Hosino, or Fought in view of Hosino.

Claim 3 recites a centerline of a pivot axis that has a vertical height that is approximately less than a vertical height of the front wheel axis when the drive wheel and front wheel are on level ground. Hosino teaches this element: “[T]he present invention proposes ... a traveling device in which each bendable portion is located beneath the rotation axis of the driving wheel and as high as a rotation center of the front caster.” *See, e.g.*, Hosino 2:38-44 (Ex. 1005). “[I]t is particularly preferable that the bending portion 5 is positioned generally as high as a center O₂ of the front caster.” *See, e.g., id.* 4:21-23 (Ex. 1005).

Because wheelchairs with a pivot axis that were as high as (and thus sometimes lower) than the vertical height of the front wheel axis were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claim 1. This amounts to a routine design choice from a limited number of possible design options that would have yielded predictable results. *See Richter Decl.* ¶ 73 (Ex. 1008). Accordingly, claim 3 is not patentable.

Claim 3: The wheelchair of claim 1, wherein a centerline of the pivot axis has a vertical height that is approximately less than a vertical height of the front wheel axis when the drive wheel and front wheel are on level ground.	<i>See, e.g.,</i> Hosino 2:38-44; 4:21-23; claim 4; Fig. 11 (Ex. 1005).
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3. Claim 4 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in View of Any of the Low Pivot References, or Fought in View of Any One of the Low Pivot References

Claim 4 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 4 is obvious over Mulhern ‘715 in view of any of the Low Pivot References, Goertzen in view of any of the Low Pivot References, or Fought in view of any one of the Low Pivot References.

Claim 4 recites a front wheel that is a caster such that the caster is in contact with a support surface while the wheelchair is at rest. Mulhern ‘715 teaches this limitation: “The anti-tip wheel 116 as illustrated in this figure [FIG. 6] is a caster type wheel and, as shown, is normally in contact with the ground G_p. A bi-directional spring strut 88 biases the anti-tip system to a resting position.” *See, e.g.,* Mulhern ‘715 ¶ [0042], Fig. 6 (Ex.1002).

Goertzen also teaches this limitation. Figure 4A (reproduced above), which shows the wheelchair when it is at rest, shows front caster wheels 106 and 108 resting on the ground. *See* Goertzen Fig. 4A, p. 7, l. 27-p. 8, l. 9 (Ex.1003).

Fought teaches this limitation as well: “Referring now to FIGS. 4A and 4B, an elevational view of the suspension of wheelchair 100 under static conditions (i.e., no acceleration or deceleration) is shown. In this regard, all of the caster and drive wheels are in contact with the wheelchair supporting or driving surface.”
See, e.g., Fought ¶ [0027], Fig. 4A (Ex. 1004).

Hosino and Harakawa also teach this limitation. *See, e.g.*, Hosino Fig. 2 (Ex. 1005); Harakawa Fig. 1 (Ex. 1007).

Because wheelchairs with a front caster wheel that is in contact with a support surface while the wheelchair is at rest were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 78 (Ex. 1008). Accordingly, claim 4 is not patentable.

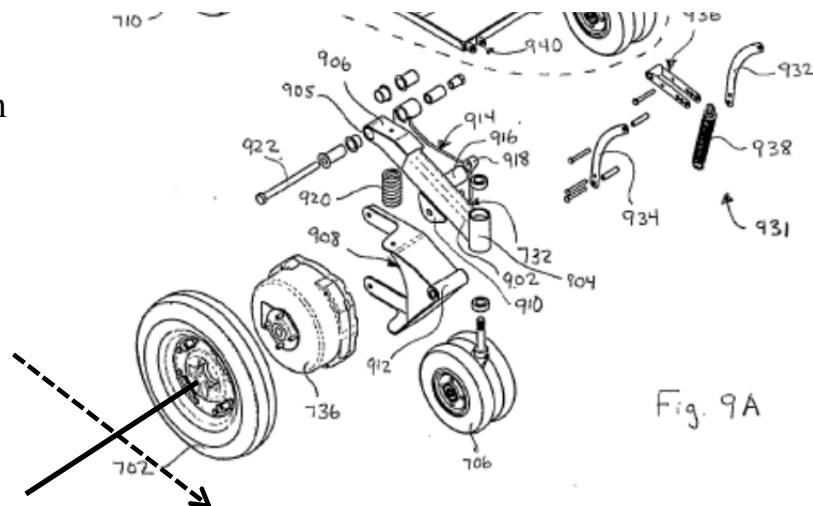
Claim 4: The wheelchair of claim 1, wherein the front wheel is a castor such that the castor is in contact with a support surface while the wheelchair is at rest.

See, e.g., Mulhern ‘715 ¶ [0042], Fig. 6 (Ex. 1002); Goertzen p. 7, l. 27-p. 8, l. 9; p. 15, ll. 16-28; Figs. 4A, 9A (Ex. 1003); Fought ¶ [0027]; Fig. 4A (Ex. 1004); Hosino Fig. 2 (Ex. 1005) ; Harakawa Fig. 1 (Ex. 1007).

4. Claim 5 is Unpatentable over Goertzen in View of Any of the Low Pivot References

Claim 5 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 5 is obvious over Goertzen in view of any of the Low Pivot References.

Claim 5 recites a drive that is oriented substantially transverse to the direction of wheelchair translation. One skilled in the art would understand that “transverse to the direction of wheelchair translation” means perpendicular to (across) the direction of wheelchair



Goertzen, Figure 9A (partially reproduced) (line and arrow added) (Ex. 1003)

motion. To determine this, one of skill in the art would look at the direction of wheelchair motion and measure an approximately 90 degree angle from this direction of motion. Goertzen teaches a wheelchair with this limitation. Figure 9A shows drive motor 736 oriented transverse (solid line) to the direction of wheelchair translation (dashed arrow). See Goertzen Fig. 9A, p. 13, ll. 11-18 (Ex. 1003).

Because wheelchairs with a drive that is oriented substantially transverse to the direction of wheelchair translation were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 81 (Ex. 1008). Accordingly, claim 5 is not patentable.

Claim 5: The wheelchair of claim 1, wherein the drive that is oriented substantially transverse to the direction of wheelchair translation.	<i>See, e.g.,</i> Goertzen p. 13, ll. 11-18; Fig. 9A (Ex. 1003).
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5. Claim 6 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in View of Any of the Low Pivot References, or Fought in View of Any of the Low Pivot References

Claim 6 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 6 is obvious over Mulhern ‘715 in view of any of the Low Pivot References, Goertzen in view of any of the Low Pivot References, or Fought in view of any of the Low Pivot References.

Claim 6 recites a wheelchair wherein the front arm and the drive are pivotable relative to the frame about a single pivot axis. As explained *supra* in Sections VIII.A.1-VIII.A.4, Mulhern ‘715, Goertzen, and Fought all teach a wheelchair wherein the front arm and the drive are pivotable relative to the frame about a single pivot axis.

Because wheelchairs with a front arm and a drive that are pivotable relative to the frame about a single pivot axis were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 84 (Ex. 1008). Accordingly, claim 6 is not patentable.

Claim 6: The wheelchair of claim 1, wherein the front arm and the drive are pivotable relative to the frame about a single pivot axis.	<i>See, e.g.,</i> Mulhern ‘715 ¶¶ [0036], [0038], [0040], Figs. 2-5 (Ex. 1002); Goertzen p. 2, ll. 17-19, p. 7, ll. 4-9; p. 10, ll. 11-24; Figs. 3, 4A, 5B (Ex. 1003); Fought ¶¶ [0019], [0021], [0031]-[0032]; Fig. 7 (Ex. 1004).
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6. Claim 7 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, or Goertzen in View of Any of the Low Pivot References

Claim 7 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 7 is obvious over Mulhern ‘715 in view of any of the Low Pivot References, or Goertzen in view of any of the Low Pivot References.

Claim 7 recites a wheelchair wherein the mounting plate is substantially planar and is oriented perpendicular to the drive wheel axis. Mulhern ‘715 teaches this limitation. A person of skill in the art would understand “oriented perpendicular to the drive wheel axis” to mean oriented such that the longest side of the plate is positioned at an approximately 90 degree angle to the drive wheel

axis. *See* Richter Decl. ¶ 86 (Ex. 1008). As can be seen in Figure 5, previously reproduced, the upper mounting plate 58 is planar, and the longest side of the plate is positioned at a 90 degree angle to the drive wheel axis P_A. *See* Mulhern ‘715 Fig. 5, ¶ [0037] (Ex. 1002).

Goertzen also teaches this limitation. As can be seen in Figure 3 of Goertzen, mounting plate 308 is substantially planar and is oriented perpendicular to the drive wheel axis 311. *See* Goertzen Fig. 3, p. 7, ll. 6-12 (Ex. 1003).

Because wheelchairs with a mounting plate is substantially planar and is oriented perpendicular to the drive wheel axis were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 88 (Ex. 1008). Accordingly, claim 7 is not patentable.

Claim 7: The wheelchair of claim 1, wherein the mounting plate is substantially planar and is oriented perpendicular to the drive wheel axis.	<i>See, e.g.,</i> Mulhern ‘715 ¶ [0037]; Fig. 5 (Ex. 1002); Goertzen p. 7, ll. 6-12; Fig. 3 (Ex. 1003).
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7. Claim 8 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in View of Any of the Low Pivot References, or Fought in View of Any of the Low Pivot References

Claim 8 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 8 is obvious over Mulhern ‘715 in view of any of the Low

Pivot References, Goertzen in view of any of the Low Pivot References, or Fought in view of any one of the Low Pivot References.

Claim 8 recites a wheelchair wherein motor torque causes the mounting plate, drive, and front arm to pivot about the pivot axis. Mulhern '715 teaches this limitation, as discussed *supra* in Section VIII.A.1. *See, e.g.*, Mulhern '715 Fig. 4, ¶ [0038] (Ex. 1002). Goertzen also discloses this claim limitation, as is discussed *supra* in Section VIII.A.3. *See, e.g.*, Goertzen p. 10, ll. 11-22, Fig. 5B (Ex. 1003). Fought also teaches this claim limitation, as is discussed *supra* in Section VIII.A.4. *See, e.g.*, Fought ¶¶ [0029], [0031], Figs. 5, 7 (Ex. 1004).

Because wheelchairs wherein motor torque causes the mounting plate, drive, and front arm to pivot about the pivot axis were known in the art, it would have been obvious to one of ordinary skill in the art to use such a feature in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 91 (Ex. 1008). Accordingly, claim 8 is not patentable.

Claim 8: The wheelchair of claim 1, wherein motor torque causes the mounting plate, drive, and front arm to pivot about the pivot axis.

See, e.g., Mulhern '715 ¶¶ [0038], [0040], Fig. 4 (Ex. 1002); Goertzen p. 2, ll. 22-25, p. 3, ll. 7-14, p. 8, l. 23 – p. 9, l. 8, p. 9, ll. 14-16; p. 10, ll. 11-24, p. 16, ll. 11-26, p. 18, ll. 1-14; Figs. 5B, 11B (Ex. 1003); Fought ¶¶ [0019], [0029], [0032]; Figs. 5, 8 (Ex. 1004); Hosino 6:44-49, Fig. 9 (Ex. 1005).

8. Claim 9 is Unpatentable over Goertzen in View of Any of the Low Pivot References

Claim 9 depends from claim 8, which as discussed *supra* is unpatentable.

Claim 9 is obvious over Goertzen in view of any of the Low Pivot References.

Claim 9 recites a wheelchair wherein the frame moves upwardly with respect to the drive wheel axis by an angle when the mounting plate pivots about the pivot axis. Goertzen teaches this limitation. Figure 5D shows wheelchair frame 120 moving upwardly with respect to the drive wheel axis by an angle as front arm 132, mounting plate 308, and drive motor 136 pivot about pivot axis 330.

See, e.g., Goertzen Fig. 5D, Fig. 11D,

p. 11, ll. 5-10 (Ex. 1003).

Because wheelchairs with a frame that moves upwardly with respect to the drive wheel axis by an angle when the mounting plate pivots about the pivot axis were known in the art, it would have been obvious to

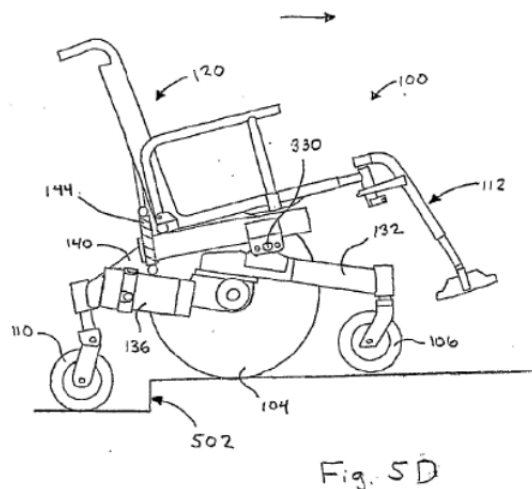


Fig. 5D

Goertzen, Figure 5D (Ex. 1003)

one of ordinary skill in the art to use such a feature in the wheelchair of claim 1.

This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 94 (Ex. 1008). Accordingly, claim 9 is not patentable.

Claim 9: The wheelchair of claim 8, wherein the frame moves upwardly with respect to the drive wheel axis by an angle when the mounting plate pivots about the pivot axis.	<i>See, e.g.,</i> Goertzen p. 11, ll. 5-10; p. 18, ll. 28-32; p. 19, ll. 1-4 Figs. 5D, 11D (Ex. 1003).
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9. Claim 10 is Unpatentable over Mulhern ‘715 in View of Any of the Low Pivot References, Goertzen in Vie of Any of the Low Pivot References, or Fought in View of Any of the Low Pivot References

Claim 10 depends from independent claim 1, which as discussed *supra* is unpatentable. Claim 10 is obvious over Mulhern ‘715 in view of any of the Low Pivot References, Goertzen in view of any of the Low Pivot References, or Fought in view of any one of the Low Pivot References.

Claim 10 recites a wheelchair wherein motor torque causes the pivot axis to move relative the drive wheel axis. Mulhern ‘715 teaches this limitation. As can be seen in Figs. 4 and 5, reproduced below, when motor torque is applied to the drive wheel as in Figure 4, the drive wheel axis P_A moves slightly forward of the pivot axis 8; when the braking is applied as in Figure 5, the drive wheel axis P_A moves slightly behind the pivot axis 8. *See* Mulhern ‘715 Figs. 4, 5, ¶¶ [0038]-[0041] (Ex. 1002).

U.S. Patent 8,408,343
Petition for *Inter Partes* Review

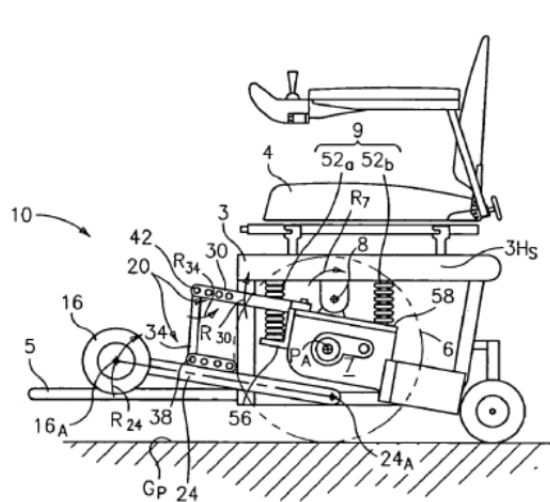


FIG. 4

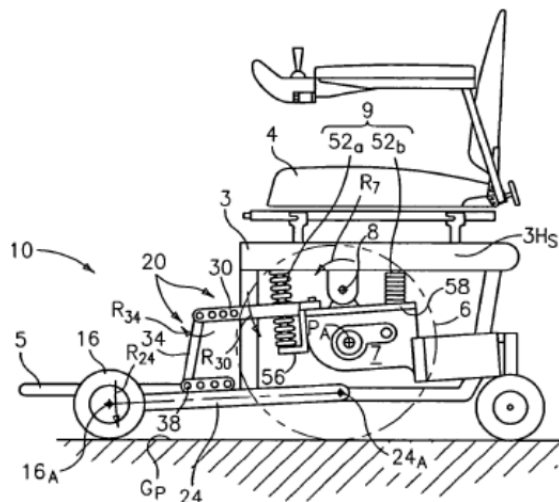


FIG. 5

Mulhern '715, Figures 4 and 5 (Ex. 1002)

Goertzen also teaches this limitation. As can be seen in Figs. 5A and 5B, reproduced below, when motor torque is applied to the drive wheel as in Figure 5B, the drive wheel axis moves forward relative to the pivot axis 330, as compared to the relative position of the drive wheel axis and pivot axis 330 in Figure 5A. See Goertzen Figs. 5A, 5B, p. 10, ll. 4-24 (Ex. 1003).

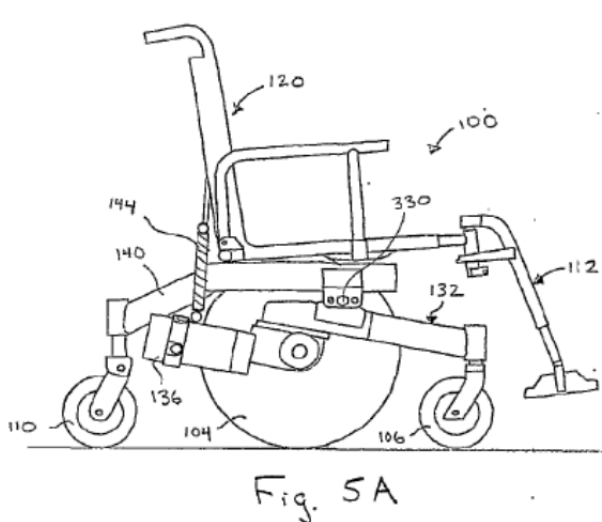


Fig. 5A

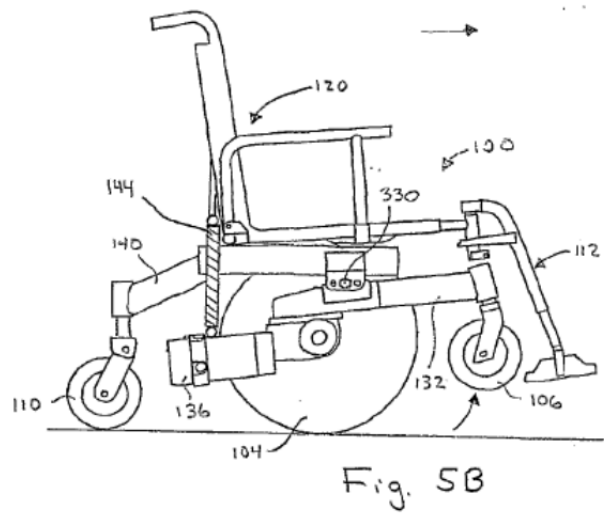
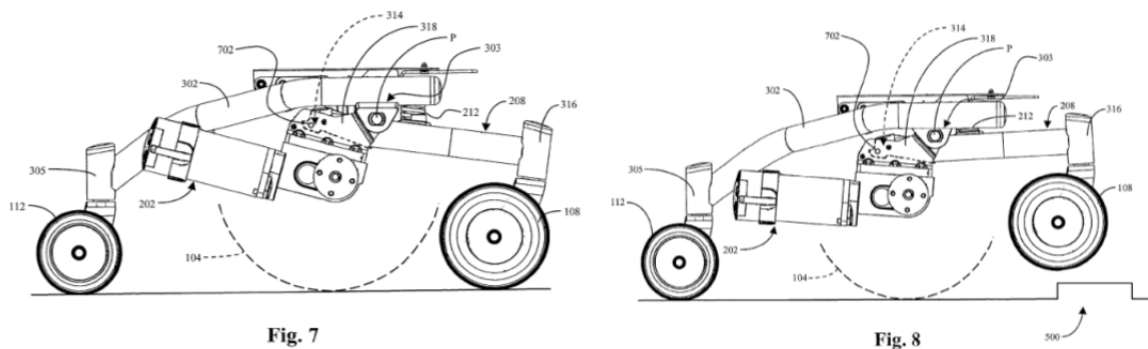


Fig. 5B

Goertzen, Figures 5A and 5B (Ex. 1003)

Fought also teaches this limitation. As can be seen in Figs. 7 and 8, reproduced below, when motor torque is applied to the drive wheel as in Figure 8, the drive wheel axis moves forward relative to the pivot axis P, as compared to the relative position of the drive wheel axis and pivot axis P in Figure 7. *See* Fought Figs. 7, 8, ¶¶ [0031], [0032] (Ex. 1004).



Fought, Figures 7 and 8 (Ex. 1004)

Because wheelchairs wherein motor torque causes the pivot axis to move relative the drive wheel axis were known in the art, it would have been obvious to one of ordinary skill in the art to use such a feature in the wheelchair of claim 1. This amounts to a routine design choice that would have yielded predictable results. *See* Richter Decl. ¶ 99 (Ex. 1008). Accordingly, claim 10 is not patentable.

<p>Claim 10: The wheelchair of claim 1, wherein motor torque causes the pivot axis to move relative the drive wheel axis.</p>	<p><i>See, e.g.,</i> Mulhern ‘715 abstract; ¶¶ [0009], [0033], [0038]-[0041], [0066]-[0069]; Figs. 4-5 (Ex. 1002); Goertzen p. 10, ll. 4-24; p. 18, ll. 1-14; Figs. 5A, 5B, 11A, 11B (Ex. 1003); Fought ¶¶ [0031]-[0032]; Figs. 7-8 (Ex. 1004).</p>
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U.S. Patent 8,408,343
Petition for *Inter Partes* Review

Based on the foregoing, claims 1-10 of the '343 patent recite subject matter that is obvious. The Petitioner requests institution of an *inter partes* review to cancel those claims.

Respectfully submitted,

Permobil, Inc.,
Petitioner

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Hale and Dorr LLP

U.S. Patent 8,408,343
Petition for *Inter Partes* Review

CERTIFICATE OF SERVICE

I hereby certify that on July 1, 2013, I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent No. 8,408,343 Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104
- Exhibits 1001-1011.
- List of Exhibits for Petition for *Inter Partes* Review of U.S. Patent No. 8,408,343 (Exhibits 1001-1011)
- Fee Authorization
- Power of Attorney

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U.S. Patent 8,408,343
Petition for *Inter Partes* Review

LIST OF EXHIBITS FOR
PETITION FOR INTER PARTES REVIEW OF
U.S. PATENT NO. 8,408,343

<u>Exhibit</u>	<u>Description</u>
1001	U.S. Patent No. 8,408,343, entitled “Powered Wheelchair Configurations And Related Methods Of Use,” to Puskar-Pasewicz <i>et al.</i> , issued Apr. 2, 2013.
1002	U.S. Patent Application Publication No. 2005/0077715, entitled “Active Anti-Tip System For Power Wheelchairs,” to Mulhern <i>et al.</i> , published Apr. 14, 2005. (“Mulhern ‘715”)
1003	PCT Publication No. WO 02/34190, entitled “Obstacle Traversing Wheelchair” to Goertzen, published May 2, 2002 (“Goertzen”)
1004	U.S. Patent Application Publication No. 2003/0075365, entitled “Wheelchair Suspension Having Pivotal Motor Mount,” to Fought, published Apr. 24, 2002. (“Fought”)
1005	U.S. Patent No. 6,454,286, entitled “Traveling Device For Smooth and Stable Movement On Uneven and Inclined Surfaces,” to Hosino, issued Sept. 24, 2002. (“Hosino”)
1006	U.S. Patent Application Publication No. 2003/0205420, entitled “Active Anti-Tip System For Power Wheelchairs,” to Mulhern <i>et al.</i> , published Apr. 14, 2005. (“Mulhern ‘420”)
1007	Japanese Patent Application Publication No. JP 2001104391, entitled “Wheelchair,” to Harakawa, published Apr. 17, 2001. (“Harakawa”)
1008	Declaration of W. Mark Richter, Ph.D.
1009	U.S. Patent No. 8,408,343 File History, 1/22/2013 Applicant-Initiated Interview Summary
1010	U.S. Patent No. 8,408,343 File History, 1/11/2013 Amendment and Response
1011	U.S. Patent No. 8,408,343 File History, 12/26/2012 Non-Final Office Action

Filed on behalf of Permobil Inc.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PERMOBIL INC.
Petitioner

v.

Patent Owner of
U.S. Patent No. 8,408,598 to Mulhern et al.

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,408,598
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

TABLE OF CONTENTS

I.	MANDATORY NOTICES	1
A.	Real Party-in-Interest	1
B.	Related Matters	1
C.	Counsel.....	2
D.	Service Information.....	2
II.	CERTIFICATION OF GROUNDS FOR STANDING	2
III.	OVERVIEW OF CHALLENGE AND RELIEF REQUESTED	2
A.	Prior Art Patents and Printed Publications.....	3
B.	Grounds for Challenge	4
IV.	LEGAL PRINCIPLES.....	4
V.	CLAIM CONSTRUCTION	6
VI.	OVERVIEW OF THE '598 PATENT	6
A.	State of the Art of Wheelchair Design in 2003	7
B.	The '598 Patent	11
C.	Summary of the Prosecution History of the '598 Patent	14
1.	Related <i>Inter Partes</i> Reexamination For Parent U.S. Patent No. 8,181,992 (Control No. 95/002,355)	14
2.	File History of the '598 patent.....	15
VII.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	16
A.	The Primary References	17

1.	Schaffner	17
2.	Goertzen	18
B.	The Low Pivot References	18
VIII.	IDENTIFICATION OF HOW THE CHALLENGED CLAIMS ARE UNPATENTABLE	19
A.	Independent Claim 1	19
1.	Claim 1 is Unpatentable over Schaffner	20
2.	Claim 1 is Unpatentable over Schaffner in View of Any One of the Low Pivot References	25
3.	Claim 1 is Unpatentable over Goertzen in View of Any One of the Low Pivot References	34
B.	Independent Claim 7	39
1.	Claim 7 is Unpatentable over Schaffner	40
2.	Claim 7 is Unpatentable over Schaffner in View of Any One of the Low Pivot References	42
3.	Claim 7 is Unpatentable over Goertzen in View of Any One of the Low Pivot References	43
C.	The Dependent Claims Are Unpatentable	47
1.	Claims 2 and 9 are Unpatentable Over Schaffner in View of Any of the Low Pivot References, or Goertzen in View of Any of the Low Pivot References and Further in View of Either Schaffner or Clark.....	47
2.	Claims 3 and 10 are Unpatentable over Schaffner in View of Any of the Low Pivot References, or Goertzen in View of Any of the Low Pivot References and Further in View of Schaffner	50

U.S. Patent 8,408,598
Petition for *Inter Partes* Review

3.	Claims 4 and 11 are Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any One of the Low Pivot References.....	53
4.	Claims 5 and 12 are Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any of the Low Pivot References.....	54
5.	Claims 6 and 13 are Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any One of the Low Pivot References.....	57
6.	Claim 8 is Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any of the Low Pivot References.....	59

TABLE OF AUTHORITIES

	Page(s)
CASES	
<i>Pride Mobility Products Corp. v. Permobil, Inc.</i> , No. 2:13-cv-01999-LDD (E.D. Pa. filed 4/15/2013).....	1
<i>Pride Mobility Products Corp. v. Permobil, Inc.</i> , No. 2:12-cv-03931 (E.D. Pa.).....	1
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	4
<i>In re ICON Health and Fitness, Inc.</i> , 496 F.3d 1374 (Fed. Cir. 2007)	6
<i>KSR Int’l Co. v. Teleflex, Inc.</i> , 550 U.S. 398 (2007).....	4, 5
<i>Rockwell Int’l Corp.v. United States</i> , 147 F.3d 1358 (Fed. Cir. 1998)	4
STATUTES	
35 U.S.C. § 102(a)	3
35 U.S.C. § 102(b)	3, 7
35 U.S.C. § 103	4, 5
35 U.S.C. § 112	6
35 U.S.C. § 314(a)	4
OTHER AUTHORITIES	
Rule 42.22(a)(1)	2
Rule 42.100(b)	6

U.S. Patent 8,408,598
Petition for *Inter Partes* Review

Rule 42.104(a).....	2
Rule 42.104(b)(1)-(2).....	2
Rule 42.104(b)(4)-(5).....	19
77 Fed. Reg. 48764 (Aug. 14, 2012)	6

I. MANDATORY NOTICES

A. Real Party-in-Interest

Permobil Inc. (“Petitioner”) is the real party-in-interest and submits this *inter partes* review Petition (“Petition”) for review of certain claims of U.S. Patent No. 8,408,598 (the “’598 patent”).

B. Related Matters

The following litigation matter would affect or be affected by a decision in this proceeding: *Pride Mobility Products Corp. v. Permobil, Inc.*, No. 2:13-cv-01999-LDD (E.D. Pa. filed 4/15/2013). The litigation involves two patents: the ‘598 patent and U.S. Patent No. 8,408,343 (the “’343 patent”). The parent patent of the ‘598 patent – U.S. Patent No. 8,181,992 (the “’992 patent”) – is the subject of an *inter partes* reexamination proceeding, Control No. 95/002,355.¹ The claims of the ‘598 patent are the subject of this Petition. A separate petition for *inter partes* review of the ‘343 patent is being filed concurrently with this petition. Because the technology and disclosure in the patents are similar and for the sake of administrative efficiency and consistent outcome, Petitioner requests that the

¹ The ‘992 patent is also the subject of a district court litigation—*Pride Mobility Products Corp. v. Permobil, Inc.*, No. 2:12cv03931 (E.D. Pa.)—that is currently stayed pending the outcome of the *inter partes* reexamination proceeding.

Patent Trial and Appeals Board (“PTAB”) have a single Administrative panel address these two *inter partes* reviews.

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II. CERTIFICATION OF GROUNDS FOR STANDING

Petitioner certifies pursuant to Rule 42.104(a) that the patent for which review is sought is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this Petition.

III. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

Pursuant to Rules 42.22(a)(1) and 42.104(b)(1)-(2), Petitioner challenges claims 1-13 of the ‘598 patent (Ex. 1001).

A. Prior Art Patents and Printed Publications

Petitioner relies upon the following patents and printed publications:

1. U.S. Patent No. 6,129,165 (“Schaffner”; Ex. 1002), which issued on October 10, 2000, and is prior art to the ‘598 patent under 35 U.S.C. § 102(b).
2. International Publication No. WO 02/34190 (“Goertzen”; Ex. 1003), which was published on May 2, 2002, and is prior art to the ‘598 patent under 35 U.S.C. § 102(b).
3. U.S. Patent No. 6,454,286 (“Hosino”; Ex. 1004), which issued on September 24, 2002 and is prior art to the ‘598 patent under 35 U.S.C. § 102(b).
4. U.S. Patent Application Publication No. 2003/0205420 (“Mulhern ‘420”; Ex. 1005), which has a filing date of May 6, 2002, and is prior art to the ‘598 patent under 35 U.S.C. § 102(a).
5. Japanese Patent No. JP 2001104391 (“Harakawa”; Ex. 1006), which was published on April 17, 2001, and is prior art to the ‘598 patent under 35 U.S.C. § 102(b).
6. Canada Patent Application No. 2,254,372 (“Clark”; Ex. 1007), which was published on May 17, 2000, and is prior art to the ‘598 patent under 35 U.S.C. § 102(b).

B. Grounds for Challenge

Petitioner requests cancellation of claims 1-13, the challenged claims, as unpatentable under 35 U.S.C. § 103.

This Petition, supported by the declaration of Dr. Mark Richter (“Richter Declaration” or “Richter Decl.”; Ex. 1008) filed with this Petition, demonstrates that there is a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims and that each of the challenged claims is unpatentable for the reasons cited in this petition. *See* 35 U.S.C. § 314(a).

IV. LEGAL PRINCIPLES

The challenged claims are unpatentable because they are obvious under 35 U.S.C. § 103. A claim is invalid if it would have been obvious—that is,

if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which [the] subject matter pertains.

35 U.S.C. § 103; *see also Rockwell Int’l Corp. v. United States*, 147 F.3d 1358, 1364 (Fed. Cir. 1998).

In *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 415 (2007), the U.S. Supreme Court addressed the issue of obviousness and provided an “expansive and flexible” approach that is consistent with the “broad inquiry” set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). According to the Supreme

Court, a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton,” *KSR*, 550 U.S. at 421, and “in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle,” *id.* at 420. The Court held that

[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under [35 U.S.C.] § 103.

Id. at 421. Thus, *KSR* focused on whether a combination of known elements could be patentable if it yielded predictable results. The Court’s guidance was clear: it may not. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. Further, “[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* at 417.

The Board must ask, as guided by *KSR*, whether the challenged claims recite an improvement that is “more than the predictable use of prior art elements according to their established functions.” *Id.* at 417. The Board should conclude, based on the information in this Petition, that the challenged claims are merely a

predictable combination of known elements that are used according to their established functions, and that they are therefore unpatentable, and an *inter partes* review of the challenged claims should therefore be instituted..

V. CLAIM CONSTRUCTION

A claim in *inter partes* review is given the “broadest reasonable construction in light of the specification.” 37 C.F.R. § 42.100(b). Any claim term which lacks a definition in the specification is therefore also given a broad interpretation. *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). For the purposes of this proceeding, claim terms are to be given their broadest reasonable interpretation in light of the specification as commonly understood by those of ordinary skill in the art. Moreover, should the Patent Owner, in order to avoid the prior art, contend that the claims have a construction different from their broadest reasonable construction, the appropriate course is for the Patent Owner to seek to amend the claims to expressly correspond to its contentions in this proceeding. *See* 77 Fed. Reg. 48764 (Aug. 14, 2012). Any such amendment would only be permissible if the proposed amended claims comply with 35 U.S.C. §112.

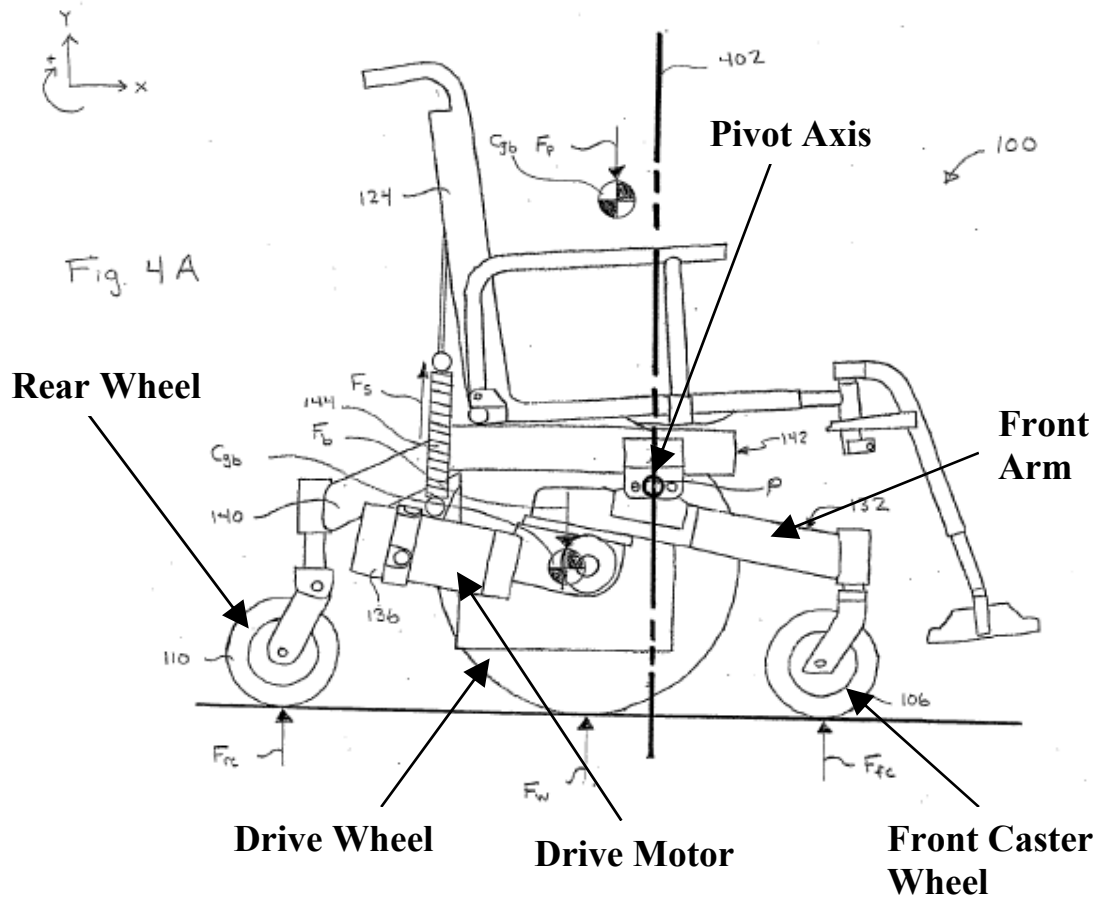
VI. OVERVIEW OF THE '598 PATENT

The application that issued as the '598 patent (Ex.1001) was filed on May 4, 2012, and is a continuation of U.S. Patent No. 8,181,992, which was filed on January 20, 2011, which is a continuation of U.S. Patent No. 7,931,300, which was

filed on May 14, 2010, which is a continuation of U.S. Patent No. 7,726,689, which was filed on July 10, 2008, which is a continuation of U.S. Patent No. 7,413,038, which was filed on July 13, 2005, which is a continuation-in-part of U.S. Patent No. 7,389,835, which was filed on October 8, 2004. The ‘598 patent claims priority to provisional application nos. 60/509,649 and 60/509,495, both filed on October 8, 2003.

A. State of the Art of Wheelchair Design in 2003

At the time of the claimed priority date of the ‘598 patent (*i.e.*, October 2003), powered wheelchairs having a frame, a pair of drive wheels, and a drive assembly (*e.g.*, motor) for driving the drive wheels were well known in the art. Goertzen, which was published in 2002 (and is thus prior art to the ‘598 patent under 35 U.S.C. § 102(b)), illustrates a powered wheelchair having these features, as is shown in Figure 4A, reproduced below:

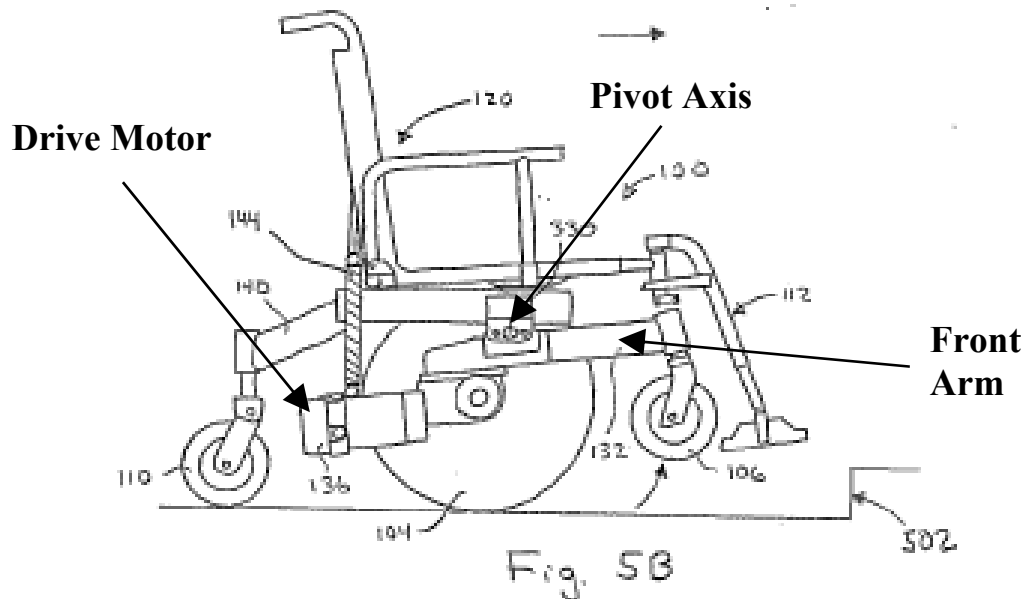


Goertzen, Figure 4A (Ex. 1003)

It was also known in the art to have a front arm with a caster wheel on the end of the arm. These front arms were routinely pivotably mounted to the frame at an arm pivot axis. In Figure 4A above, Goertzen again shows a front arm that is pivotably mounted to the wheelchair frame at a pivot point P, and a front caster wheel coupled to the front of the arm.

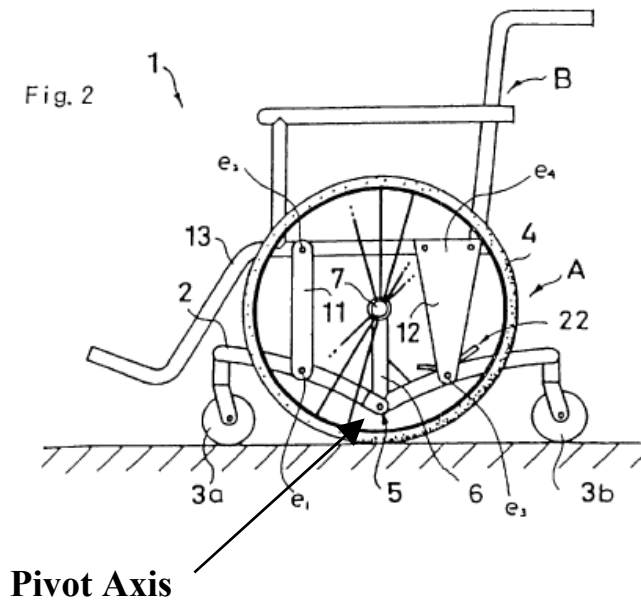
Further, it was known in the art to operatively couple the drive assembly (e.g., motor) to the front arm so that the arm pivots about the arm pivot axis in

response to torque created by rotation of the drive wheel, so as to cause the caster wheel to move vertically. Goertzen demonstrates this design feature in Figure 5B:

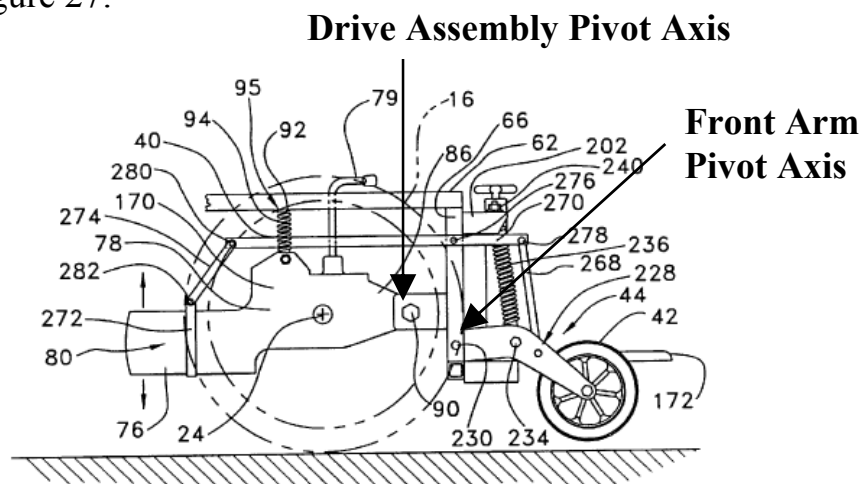


Goertzen, Figure 5B (Ex. 1003)

It was also well known in the art that a pivot axis could be placed at various locations on a wheelchair. Wheelchairs with a relatively high pivot axis, such as the chair in Goertzen, were known. Wheelchairs with a relatively low pivot axis, such as the chair in Hosino Figure 2 (shown below), were also known.

**Hosino, Figure 2 (Ex. 1004)**

Furthermore, it was known in the art that two separate pivot axes could be used—a drive assembly pivot axis and a front arm pivot axis—so as to allow the front arm to pivot separately from the drive assembly. Schaffner teaches this design feature in Figure 27:

**FIG. 27****Schaffner, Figure 27 (Ex. 1002)**

B. The ‘598 Patent

The ‘598 patent describes an anti-tip system for improving the stability of a powered wheelchair. *See, e.g.*, ‘598 patent, Abstract (Ex. 1001). The patent provides a drive-train assembly that is pivotally mounted to a main structural frame and rotates about the pivot in response to torque applied to or acceleration forces on the wheelchair. *See, e.g., id.* (Ex. 1001). A front suspension arm is provided that is pivotally mounted to the frame about an arm pivot axis at one end, and has either an anti-tip wheel or a caster wheel attached to the end. *See, e.g., id.* (Ex. 1001). A linkage arrangement provides a link between the drive train assembly and the suspension arm to transfer the displacement of the drive-train assembly to the suspension arm and the front wheel. *See, e.g., id.* (Ex. 1001).

Figures 2 and 4, reproduced below, illustrate one embodiment of the wheelchair described in the ‘598 patent. Figure 4 shows the wheelchair during acceleration of the chair, causing the front wheels to rise vertically and the drive train assembly to pivot clockwise about the pivot axis in response to the acceleration of the drive wheels.

U.S. Patent 8,408,598
Petition for *Inter Partes* Review

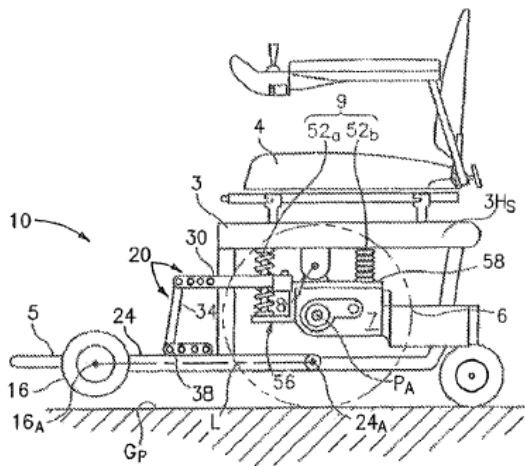


FIG. 2

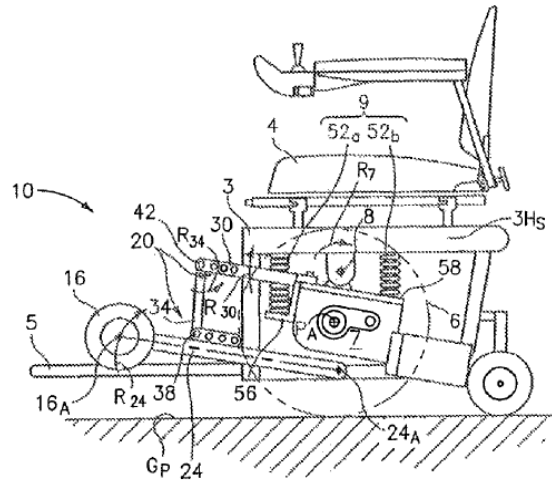
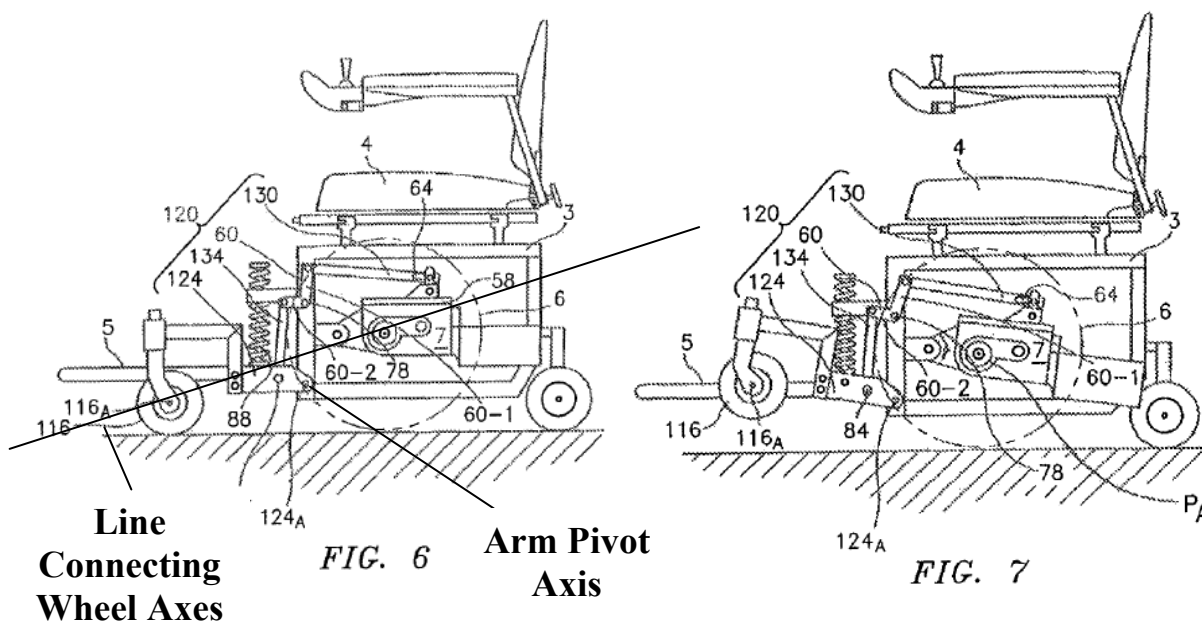


FIG. 4

‘598 Patent, Figures 2 and 4 (Ex. 1001)

Figures 6 and 7, reproduced below, illustrate a second embodiment of the wheelchair in a normal resting position (Fig. 6) and during acceleration (Fig. 7). Notably, this second embodiment has front caster wheels instead of front anti-tip wheels, demonstrating that caster wheels and anti-tip wheels were used interchangeably and were both tools available to a person of skill in the art during the wheelchair design process.



‘598 Patent, Figures 6 and 7 (w/ line connecting wheel axes added)(Ex. 1001)

In Figure 6 above, a line connecting the front wheel axis and the drive wheel axis has been drawn over the figure to show the relative location of the pivot axis (i.e., below-the-line). While the claims recite this configuration, the ‘598 patent specification does not explicitly describe such a line connecting the wheel axes, nor does it explain the benefits of locating the arm pivot axis below this particular line. *See* Richter Decl. ¶ 22 (Ex. 1008).

The claimed wheelchair is merely the combination of known elements from existing wheelchairs where each element performs as expected and the combination yields predictable results. *See* Richter Decl. ¶ 23 (Ex. 1008). As shown by the Exhibits and the Richter Declaration, the claimed wheelchair would have been obvious to a person of ordinary skill in the art.

C. Summary of the Prosecution History of the ‘598 Patent**1. Related *Inter Partes* Reexamination For Parent U.S. Patent No. 8,181,992 (Control No. 95/002,355)**

U.S. Patent No. 8,181,992 (the “‘992 patent”), the parent patent to the ‘598 patent, is currently undergoing *inter partes* reexamination. On April 24, 2013, the Examiner issued an Action Closing Prosecution, finally rejecting all 21 claims of the ‘992 patent. *See* File History of ‘992 Reexamination, 4/24/2013 Action Closing Prosecution (Ex. 1010).

The claims that currently stand rejected in the ‘992 patent are strikingly similar to the claims of the ‘598 patent. For example, claim 1 of the ‘992 patent and claim 1 of the ‘598 patent both claim (a) a wheelchair frame, (b) a pair of drive wheels, (c) a drive assembly operatively coupled to at least one drive wheel for powering the drive wheel(s), (d) an arm pivotably mounted to the frame at an arm pivot axis, and (e) a wheel coupled to the arm, wherein (f) the arm pivot axis is located below a line connecting the front wheel axis and the drive wheel axis, and (g) in response to motor torque to drive the drive wheel, the arm pivots about the arm pivot axis and results in vertical movement of the wheel. *See* ‘992 patent, Claim 1 (Ex. 1009); ‘598 patent, Claim 1 (Ex. 1001).

Claim 1 of the ‘598 patent has only two additional limitations compared to claim 1 of the ‘992 patent: (1) a ***caster wheel*** coupled to the arm (compared to an

anti-tip wheel in the '992 patent) and (2) a requirement that the arm pivot axis be below the line connecting the wheel axes ***when both the drive wheel and the front caster wheel are in contact with the ground***. The Patent Owner added these new limitations to claim 1 of the '598 patent application in a November 5, 2012 amendment, about two months after the Third Party Requester filed its Request for *Inter Partes* Reexamination for the '992 patent. *See* '598 Patent File History, 11/5/12 Reply to Office Action (Ex. 1011). Presumably, the Patent Owner added these limitations to attempt to distinguish its new claims over the invalidating prior art identified by the Third Party Requester. In any event, it is clear that these two additional claim limitations do not define anything that was not already known in the art.

In the Action Closing Prosecution for the Reexamination, the Examiner rejected all 21 claims as either anticipated or rendered obvious over Schaffner or Clark, in combination with several secondary references. *See* File History of '992 Reexamination, 4/24/2013 Action Closing Prosecution (Ex. 1010). As will be explained below, the claims of the '598 patent are also rendered by obvious by, *inter alia*, Schaffner, either alone or in in combination with other references.

2. File History of the '598 patent

The Examiner issued a non-final office action rejecting or objecting to the pending claims. *See* '598 Patent File History, 6/15/12 Non-Final Office Action

(Ex. 1012). Approximately two months after the Request for Reexamination was filed in for the '992 patent, the Patent Owner filed a response, canceling all of the pending claims and adding new claims 15-27, adding the two new limitations as discussed above. *See* '598 Patent File History, 11/15/12 Reply to Office Action (Ex. 1011).

About one month later, the Examiner issued a final office action rejecting the new claims as obvious over Clark (Canada Patent No. 2,254,372). *See* '598 Patent File History, December 21, 2012 Office Action (Ex. 1013). The Patent Owner held an interview with the Examiner and filed a reply, in which the Patent Owner argued that "Clark's suspension arm 60 does not rotate about its pivot axis 80 'in response to [motor] torque' as required in all the pending claims." *See* '598 Patent File History, February 4, 2013 Reply (Ex. 1014). The Patent Owner did not attempt to distinguish the pending claims from Clark in any other way; as shown by the references below, the distinction upon which the Patent Owner seeks to base patentability is well known.

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

The challenged claims recite features long known by persons of skill in the art in the field of wheelchair design. *See* Richter Decl. ¶¶ 14-21 (Ex. 1008). The purported invention is a combination of known features, all of which were well known to those skilled in the art before and at the time to which the '598 patent

claims priority. In the claimed combinations, the structures all have known functions that perform in expected ways. *See id.* (Ex. 1008). Based on the prior art cited above and described below, the claimed limitations of the alleged invention perform known functions with an expected result.

The prior art falls into two categories: (1) the Primary References (*i.e.*, Schaffner and Goertzen); and (2) prior art references that disclose or make obvious the claimed pivot point that is located below a straight line between the front wheel axis and the drive wheel axis (Hosino, Mulhern ‘420, and Harakawa, *i.e.*, the “Low Pivot References”). The Low Pivot References also teach, make obvious, and provide one of ordinary skill in the art with ample reason and motivation to place a front arm pivot point below this line between the wheel axes.

A. The Primary References

1. Schaffner

Schaffner teaches a powered wheelchair having a frame, a pair of main drive wheels, a drive assembly with a motor to drive the main drive wheels, a pair of front arms with anti-tip wheels attached at the ends, and arm pivots connecting the front arms to the frame. *See, e.g.*, Schaffner Figs. 2, 27 (Ex. 1002). Schaffner further teaches a mechanism for raising the front anti-tip wheels when the chair accelerates. *See, e.g., id.* 23:9-26; 24: 34-54, 26:64-27:10 (Ex. 1002).

2. Goertzen

The Goertzen reference teaches a powered wheelchair having a frame, a pair of main drive wheels, a drive assembly with a motor to drive the main drive wheels, a pair of front arms with front caster wheels attached at the ends, and arm pivots connecting the front arms to the frame. *See, e.g.*, Goertzen Fig. 4A; p. 5, l. 12-p. 6, l. 15 (Ex. 1003). Goertzen further teaches a mechanism for raising the front caster wheels when the chair accelerates, and lowering the front caster wheels when the chair decelerates. *See, e.g., id.* Figs. 4B, 4C, p. 8, l. 23-p. 9, l. 18 (Ex. 1003).

B. The Low Pivot References

Hosino (Ex. 1005), Mulhern '420 (Ex. 1006), and Harakawa (Ex. 1007), *i.e.*, the “Low Pivot References,” disclose and/or render obvious the limitation requiring the front arm pivot to be below a line connecting the front wheel axis and the drive wheel axis.

Hosino discloses a powered wheelchair with a loop frame having a pair of drive wheels, a front caster wheel, a rear caster wheel, a front arm to which the front caster wheel is attached, and an arm pivot that is located below a straight line drawn between the front caster wheel axis and the drive wheel axis. *See Hosino* Figs. 1-2, 3:58-4:23 (Ex. 1004). Hosino specifically states that it is preferable that

the arm pivot be “positioned generally as high as a center O2 of the front caster.”

See id. 4:18-23 (Ex. 1004).

Mulhern ‘420 discloses a powered wheelchair having a pair of drive wheels, a pair of front anti-tip wheels, a pair of rear caster wheels, a pair of front arms to which the front anti-tip wheels are attached, and a pair of front arm pivots that are located below a straight line drawn between the front wheel axis and the drive wheel axis. *See Mulhern ‘420* Fig. 1, ¶¶ [0022] (Ex. 1005).

Harakawa discloses a powered wheelchair with a pair of drive wheels, a pair of front caster wheels, a pair of rear caster wheels, a pair of front arms to which the front caster wheels are attached, and a pair of front arm pivots that are located below a straight line drawn between the front wheel axis and the drive wheel axis. *See Harakawa* Fig. 1, Abstract (Ex. 1006).

VIII. IDENTIFICATION OF HOW THE CHALLENGED CLAIMS ARE UNPATENTABLE

Pursuant to Rule 42.104(b)(4)-(5), specific grounds identified below and discussed in the Richter Declaration show in detail the prior art disclosures that render the challenged claims unpatentable.

A. Independent Claim 1

Challenged claim 1 requires a wheelchair including: (a) a frame; (b) a pair of drive wheels, (c) a drive assembly operatively coupled to at least one drive wheel

and configured to rotate the at least one drive wheel to cause the wheelchair to move; (d) an arm pivotably mounted to the frame at an arm pivot axis; (e) a caster wheel coupled to the arm; (f) wherein the arm pivot axis is positioned below a line connecting the axis of the caster wheel and the axis of the drive wheel when the caster wheel and the drive wheel are on the ground; and (g) wherein the arm is operatively coupled to the drive assembly such that the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel so as to cause a vertical movement of the caster wheel. All of the features of claim 1 are shown in the prior art. *See* Richter Decl. ¶ 25 (Ex. 1008).

1. Claim 1 is Unpatentable over Schaffner

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Schaffner.

Schaffner discloses a wheelchair frame, as required by limitation 1(a). In the embodiment depicted in Figure 27, Schaffner teaches a wheelchair 10 with a frame 12.

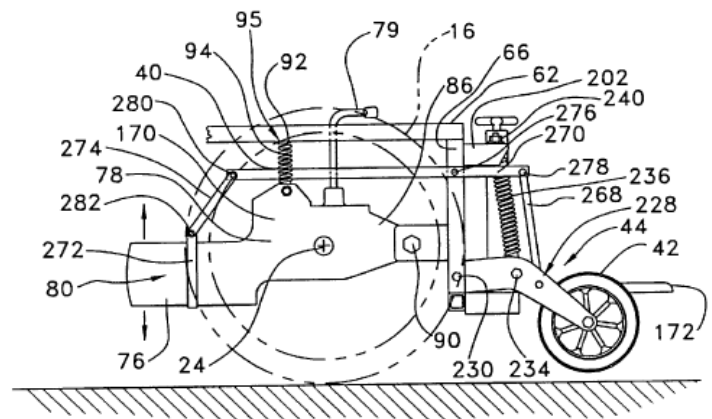


FIG. 27

Schaffner, Figure 27 (Ex. 1002)

See, e.g., Schaffner Fig. 27, 25:33-37 (Ex. 1002). Schaffner also teaches a

wheelchair having a pair of drive wheels defining a drive wheel axis, as required by limitation 1(b). Again, in Figure 27, Schaffner shows a drive wheel 16 having a drive wheel axis 24. *See, e.g., id.*, Fig. 27, 26:41-47 (Ex. 1002). As Schaffner illustrates, wheelchairs with a frame, drive wheels, and a drive wheel axis were well known in the art. *See* Richter Decl. ¶ 27 (Ex. 1008).

Schaffner further discloses a drive assembly operatively coupled to at least one drive wheel, configured to rotate the drive wheel and cause the wheelchair to move relative to a surface that defines a ground plane, as required by limitation 1(c). In Figure 27, housing 80 contains motor 76 and transmission 78 for powering drive wheel 16. *See, e.g., id.* Fig. 27, 26:41-52, 8:60-66 (Ex. 1002). Wheelchairs with a drive assembly configured to power the wheelchair were well known in the art. *See* Richter Decl. ¶ 28 (Ex. 1008).

Schaffner also discloses an arm pivotably mounted to the frame at an arm pivot axis, as required by claim limitation 1(d): “[A]nti-tip wheels 42 move arcuately, together with U-shaped spindle 228, as they pivot about pivotal connection 230 relative to frame 12.” *See, e.g., id.* 25:59-63 (Ex. 1002).

Wheelchairs with an arm pivotably mounted to the frame at a pivot axis were known in the art, as Schaffner demonstrates. *See* Richter Decl. ¶ 29 (Ex. 1008).

Schaffner also discloses an arm that is operatively coupled to the drive assembly such that the arm is configured to pivot about the arm pivot axis in

response to torque created by rotation of the at least one drive wheel by the drive assembly so as to cause a responsive vertical movement of the wheel, as required by claim limitation 1(g):

Movement of motor 76 and especially pivotal movement of housing 80 relative to frame 12 indirectly controls action of anti-tip wheels 42 in the embodiment illustrated schematically in FIG. 27. ... The linkage consisting of pivoting beam 270, vertical link 268 and intermediate line 274 transfer motion between the rear end of motor/transmission housing 80 remote from pivot point 90 and forward anti-tip wheels 42, thereby accomplishing indirectly the same action/reaction of these components to drive wheel acceleration/deceleration as accomplished by the direct connection structure illustrated in FIGS. 28 through 37.

See, e.g., Schaffner 26:53-27:10 (Ex. 1002).

When the power wheelchair accelerates, as torque generated by the drive motors is applied to the associated drive wheels, reaction of suspension member 310 to such acceleration causes suspension member 310 to tend to rotate about pivot connection 318 in a direction opposite that of rotation of the drive wheels 16. ... This acceleration of drive wheel 16 causes suspension member 310 to tend to rotate counterclockwise about pivot connection 318, lifting forward anti-tip wheel 42.

See, e.g., id. 23:12-23 (Ex. 1002). As illustrated by Schaffner, wheelchairs having an arm that is configured to pivot about the pivot axis in response to torque

generated by the drive wheel so as to lift the front wheel were known in the art.

See Richter Decl. ¶ 30 (Ex. 1008).

Schaffner does not explicitly disclose a caster wheel coupled to the arm, as recited in claim limitation 1(d), or an arm pivot axis having a vertical position when the caster wheel and the drive wheel are in contact with the ground surface that is positioned relatively below a line drawn between the drive wheel axis and the rotational axis of the caster wheel, as required by claim limitation 1(e). These features would have been obvious to a person of ordinary skill in the art. *See* Richter Decl. ¶ 31 (Ex. 1008).

The use of caster wheels in wheelchairs was well known in the art. Caster wheels and anti-tip wheels have been commonly used in wheelchair design, and the use of caster wheels instead of anti-tip wheels would have been a routine design choice having predictable results. *See* Richter Decl. ¶ 30 (Ex. 1008). Schaffner teaches the use of caster wheels on the rear ground engaging wheels 18. *See, e.g.*, Schaffner Fig. 2, 9:15-17 (Ex. 1002). The '598 patent itself suggests that caster wheels and anti-tip wheels are interchangeable: "As illustrated, the anti-tip wheel has a fixed axis, rather than being a caster However, caster type anti-tip wheels may be used on this embodiment, as well as any of embodiments shown." *See* '598 patent, 7:62-66 (Ex. 1001). It would have been obvious to couple caster

wheels to the front arms of Schaffner, and the use of caster wheels would have had entirely predictable results. *See* Richter Decl. ¶ 32 (Ex. 1008).

It also would have been obvious to locate an arm pivot axis at one of numerous places in the design, including below a line drawn between the drive wheel axis and the rotational axis of the caster wheel, when both wheels are on the ground as recited in the claims. In related *inter partes* reexamination control no. 95/002,355, discussed *supra*, the Examiner agreed with the Requester that the location of the arm pivot axis could be modified by a person of ordinary skill in the art:

In addition, one of ordinary skill in the art would appreciate that the relative positions of the pivots 230, the drive wheel axis 24 and the rotational axes of the anti-tip wheels 42 could be modified by moving the pivots 230 downward relative to the drive wheel axis 24 and the rotational axes of the anti-tip wheels 42 in order to suit particular design criteria. ... Therefore, it would have been obvious to one of ordinary skill in the art to modify Schaffner et al. by positioning each pivot 230 below a line drawn between the drive wheel axis 24 and the rotational axis of the respective anti-tip wheel 42 in order to adapt the anti-tip wheel suspension to a particular application and/or end user. *See* Reexamination Control No. 95/002,355, 4/24/2013 Action Closing Prosecution at 13 (Ex. 1010). Further, Schaffner teaches that the height of front anti-tip wheels 42 are adjustable: “Rotation of nut 240 also adjusts the distance at which wheels 42

are from the ground.” *See, e.g.*, Schaffner 26:33-40 (Ex. 1002). It would have been a matter of routine engineering design to adjust the front wheel so that it contacted the ground, and to adjust the vertical location of the arm pivot axis so that it was located below a line connecting the drive wheel axis and the front wheel axis, with predictable results. *See* Richter Decl. ¶ 33 (Ex. 1008).

Low pivot axes were also known in the art, and others have stated the advantages of locating a pivot axis in a low position. Hosino, for example, states that “it is particularly preferable that the bending portion 5 [pivot axis] is positioned generally as high as a center O₂ of the front caster” and that locating the pivot axis at a lower vertical location results in a larger upward vertical force component for the front caster wheel.² *See* Hosino 4:21-23; 6:50-65 (Ex. 1004). *See* Richter Decl. ¶ 33 (Ex. 1008). Accordingly, claim 1 is obvious over Schaffner.

2. Claim 1 is Unpatentable over Schaffner in View of Any One of the Low Pivot References

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Schaffner combined with any one of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

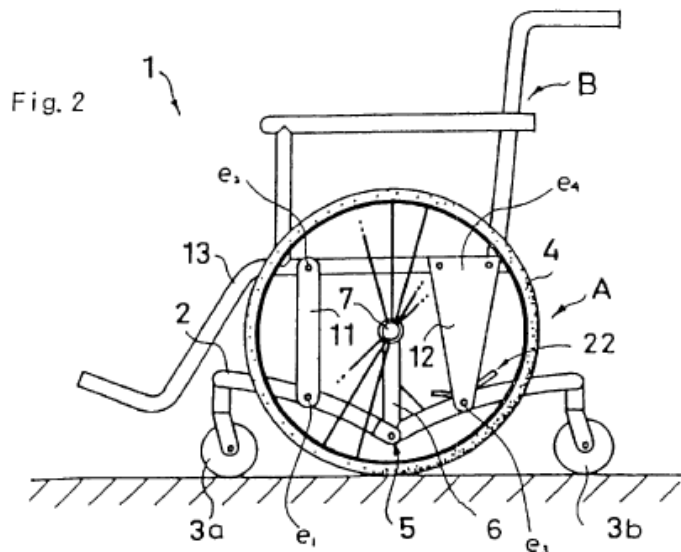
As discussed *supra* in Section VIII.A.1, Schaffner discloses all of the limitations of claim 1 except for a caster wheel coupled to the front arm (limitation

² See Section VIII.A.2.a), *infra*, for a complete discussion of Hosino.

1(e)) and a vertical position of the arm pivot axis that is located below a line drawn between the drive wheel axis and the rotational axis of the front caster wheel when the wheels are on the ground surface (limitation 1(f)). Although these limitations would have been obvious to a person of ordinary skill in the art under Schaffner alone, claim 1 also would have been obvious over Schaffner in view of any of Hosino, Mulhern '420, or Harakawa (*i.e.*, the "Low Pivot References").

a) Claim 1 is Obvious over Schaffner in View of Hosino

Claim 1 is obvious over Schaffner in view of Hosino. Hosino discloses a wheelchair with an arm pivot axis having a vertical position when the caster wheel and the drive wheel are in contact with the surface that is spaced from and positioned relatively below a straight line drawn between the drive wheel axis and the rotational axis of the caster wheel, as claim limitation 1(f) requires. Hosino discloses a wheelchair 1 with a loop frame 2 having a caster wheel 3a on the front end of the frame and a caster wheel 3b on the rear end of the frame, as well as two large



Hosino, Figure 2 (Ex. 1004)

driving wheels 4. *See* Hosino, 3:35-41 (Ex. 1004). The loop frame 2 has a

bendable portion 5, which allows the side frame to bend upward or downwards. *See id.*, 3:41-45 (Ex. 1004). “The front half-frame 2a has a pair of rear end portions furcating like a two-prong fork in which the respective front end portion of the rear half-frame 2b is connected by means of a pivot or any other suitable method so as to form the bendable portion 5 which is allowed to bend upwardly and downwardly.” *Id.*, 3:66-4:5 (Ex. 1004). Figure 2 shows the loop frame 2 with pivot point 5. *See* Richter Decl. ¶ 36 (Ex. 1008).

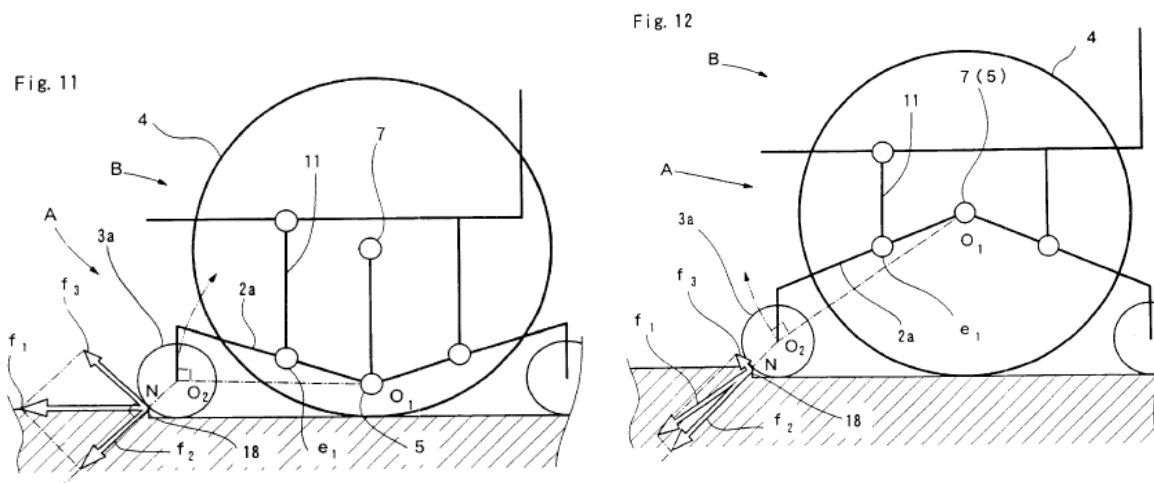
As can be seen from Figure 2, pivot point 5 is positioned below a line drawn between the axis of caster wheel 3a and drive wheel axis 7. Hosino also describes the bendable portion 5 as “located in a relatively low position” and further states that “it is particularly preferable that the bending portion 5 is positioned generally as high as a center O2 of the front caster.” *See id.* 4:14-15, 21-23 (Ex. 1004).

Hosino further provides a reason for locating the front arm pivot point at a relatively low position:

As FIG. 11 and FIG. 12 show, when the front caster 3a is pressed against the projection 18, the front caster receives a pressing force f_1 which works parallel to a line O_1O_2 connecting the rotation center O_1 of the front-half frame 2a and the rotation center O_2 of the front caster. The pressing force f_1 can be divided into a component f_2 parallel to a line O_2N connecting the center O_2 of the front caster and a point N of contact to the projection, and a component f_3 vertical to the same.

Only the component f_3 vertical to the line O_2N is effective for the front caster 3a to ride over the projection. In the structure according to the FIG. 11, the rotation center O_1 of the front-half frame is positioned lower than the rotation axis 7 of the driving wheel, such that the vertical component f_3 in FIG. 11 is larger than that in FIG. 12, such that a load for running over the projection getting smaller in the former case.

See *id.* 6:50-65 (Ex. 1004). Figures 11 and 12 are reproduced below:



Hosino, Figures 11 and 12 (Ex. 1004)

Hosino discloses a wheelchair with an arm pivot axis that is below the line connecting the front wheel axis and the drive wheel axis when the wheels are on the ground, as claim limitation 1(f) requires. See Richter Decl. ¶ 39 (Ex. 1008). Thus, Hosino discloses an arm pivot axis with a vertical position that meets claim limitation 1(f). Together, Schaffner and Hosino disclose all the elements of claim 1. Schaffner discloses a powered wheelchair with front anti-tip wheels and a front

arm that pivots around a pivot point in response to torque from the motor, and Hosino discloses a powered wheelchair with a front caster wheel and a front arm that pivots around a pivot point that is below a line drawn between the axis of the front caster wheel and the axis of the drive wheel. It would have been obvious for one of ordinary skill in the art to position the pivot axis of the front arm in the Schaffner wheelchair below a line connecting the front wheel axis and the drive wheel axis. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 39 (Ex. 1008).

b) Claim 1 is Obvious over Schaffner in View of Mulhern ‘420

Claim 1 is obvious over Schaffner in view of Mulhern ‘420.³ Mulhern ‘420 discloses a powered wheelchair with front anti-tip wheels. *See* Mulhern ‘420 Abstract (Ex. 1005). Mulhern ‘420 discloses a front arm pivot axis having a vertical position when the front wheel and the drive wheel are in contact with the

³ Mulhern ‘420 differs from Hosino and Harakawa in that there is a relatively more complete illustration of the motor and drive assembly in Mulhern ‘420.

surface that is spaced from and positioned relatively below a straight line drawn between the drive wheel axis and the rotational axis of the front wheel, as claim limitation 1(f) requires. As shown in Figure 1, Mulhern '420 discloses a wheelchair 10 having a forwardly extending arm 24 that is pivotally connected to frame 60 by a bolt 32, and a wheel 22 that is connected to the front arm 24, where the pivot point is located below a line drawn between the axis of the front wheel 22 and the axis of main drive wheel 62. *See id.* ¶ [0022], Fig. 2 (Ex. 1005).

Mulhern '420 further explains that front wheel 22 can be lowered to the ground:

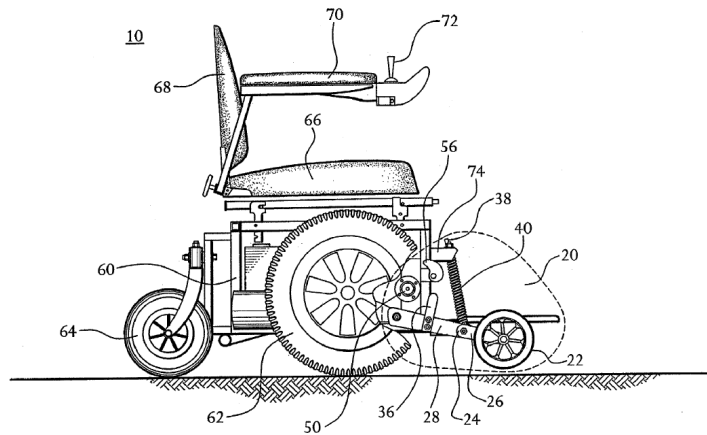


FIG. 1

Mulhern '420, Figure 1 (Ex. 1005)

“Anti-tip wheels assembly 20 further comprises a mechanism for lowering arm 24 and wheel 22. ... In this embodiment, the lowering mechanism is capable of holding wheel 22 in a near ground position As used herein, near ground position is understood to include a ground engaging position wherein the wheel 22 is in contact with the ground.” *See id.* ¶ [0024] (Ex. 1005). A person of skill in the art would understand that when the front wheel depicted in Figure 1 is lowered to the ground, the front arm pivot point would remain below a

line drawn between the front wheel axis and the drive wheel axis. *See* Richter Decl. ¶ 41 (Ex. 1008).

While Mulhern ‘420 discloses forward anti-tip wheels, it also teaches that caster wheels and anti-tip wheels are interchangeable: “Rear wheel 64 is shown as a caster wheel connected to frame 60, it being understood however, that the rear wheel 64 need not be a caster wheel. Rather, rear wheel 64 may take many alternative forms, including the form of anti-tip wheels assembly 20.” *See* Mulhern ‘420 ¶ [0020] (Ex. 1005). The ‘598 patent itself suggests that caster wheels and anti-tip wheels are interchangeable: “As illustrated, the anti-tip wheel has a fixed axis, rather than being a caster However, caster type anti-tip wheels may be used on this embodiment, as well as any of embodiments shown.” *See* ‘598 patent, 7:62-66 (Ex. 1001). Persons of ordinary skill in the art would have considered caster wheels and anti-tip wheels to be interchangeable. *See* Richter Decl. ¶ 42 (Ex. 1008).

Mulhern ‘420 discloses a wheelchair with an arm pivot axis that is below the line connecting the front wheel axis and the drive wheel axis when the wheels are on the ground, as claim limitation 1(f) requires. *See* Richter Decl. ¶ 43 (Ex. 1008). Thus, Mulhern ‘420 discloses an arm pivot axis with a vertical position that meets claim limitation 1(f). Together, Schaffner and Mulhern ‘420 disclose all the elements of claim 1. Schaffner discloses a powered wheelchair with front anti-tip

wheels and a front arm that pivots around a pivot point in response to torque from the motor, and Mulhern '420 discloses a powered wheelchair with a front anti-tip wheel and a front arm that pivots around a pivot point that is below a line drawn between the axis of the front wheel and the axis of the drive wheel.

It would have been obvious for one of ordinary skill in the art to position the pivot axis of the front arm in the Schaffner wheelchair below a line connecting the front wheel axis and the drive wheel axis. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 44 (Ex. 1008).

c) Claim 1 is Obvious over Schaffner in View of Harakawa

Claim 1 is obvious over Schaffner in view of Harakawa.⁴ Harakawa discloses a wheelchair with front caster wheels. *See* Harakawa Fig. 1 (Ex. 1006). Harakawa discloses a front arm pivot axis having a vertical position when the front

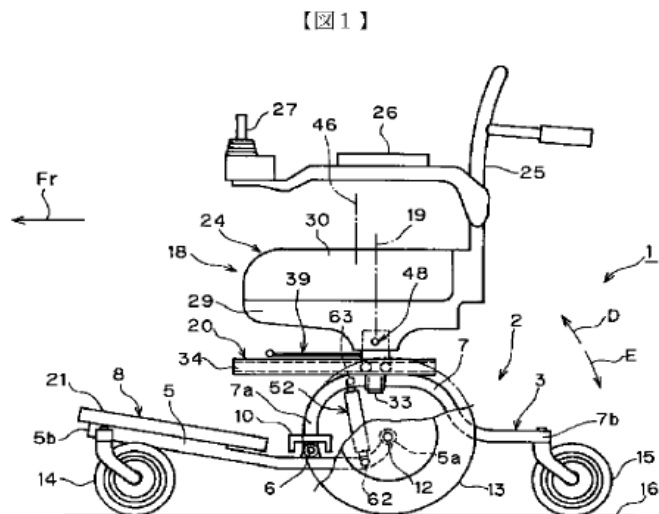
⁴ Harakawa differs from Mulhern '420 in that there is an illustration in Harakawa of a low pivot axis with a front caster wheel.

wheel and the drive wheel are in contact with the surface that is spaced from and positioned relatively below a straight line drawn between the drive wheel axis and the rotational axis of the front wheel, as claim limitation 1(f) requires. As shown in Figure 1, reproduced below, Harakawa discloses a wheelchair 1 having a front arm 5 that is pivotally connected to frame 7a at pivot point 6, and a front caster wheel 14 that is connected to the front arm 5, where the pivot point is located below a line drawn between the axis of the front wheel 14 and the axis 12 of main drive wheel 13. *See id.* Fig. 1 (Ex. 1006).

Harakawa discloses a wheelchair with an arm pivot axis that is below the line connecting the front wheel axis and the drive wheel axis when the wheels are on the ground, as claim limitation 1(f) requires. *See Richter Decl.* ¶

46 (Ex. 1008). Thus, Harakawa

discloses an arm pivot axis with a vertical position that meets claim limitation 1(f). Together, Schaffner and Harakawa disclose all the elements of claim 1. Schaffner discloses a powered wheelchair with front anti-tip wheels and a front arm that pivots around a pivot point in response to torque from the motor, and Harakawa



Harakawa, Figure 1 (Ex. 1006)

discloses a powered wheelchair with a front caster wheel and a front arm that pivots around a pivot point that is below a line drawn between the axis of the front wheel and the axis of the drive wheel.

It would have been obvious for one of ordinary skill in the art to position the pivot axis of the front arm in the Schaffner wheelchair below a line connecting the front wheel axis and the drive wheel axis, as is taught in Harakawa. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 47 (Ex. 1008).

3. Claim 1 is Unpatentable over Goertzen in View of Any One of the Low Pivot References

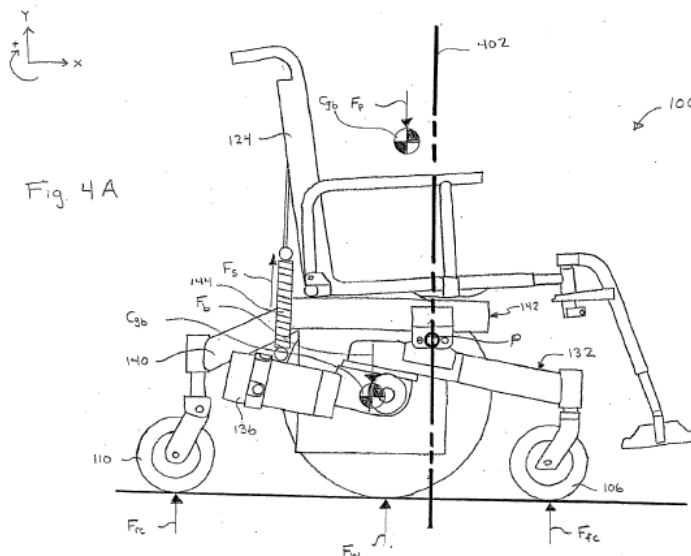
As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 1 is obvious in view of Goertzen combined with any one of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

Goertzen discloses a wheelchair frame, as required by limitation 1(a). Goertzen teaches a wheelchair 100 with a chair 120 that is adjustably mounted to frame 142. Goertzen p. 5, ll. 21-24 (Ex. 1003). Goertzen also teaches, “Springs

144 and 146 are coupled to the arms 132 and 134 and the frame 142.” *Id.* p. 6, l. 16 (Ex. 1003).

Goertzen also discloses a pair of drive wheels required by limitation 1(b): “The wheelchair 100 has a pair of drive wheels 102 and 104.” *See id.*, p. 5, ll. 13-14 (Ex. 1003). Goertzen further discloses a drive assembly operatively coupled to at least one drive wheel, configured to rotate the drive wheel and cause the wheelchair to move relative to a surface that defines a ground plane, as required by limitation 1(c). “A pair of drive motors 136 and 138 and gearboxes are used to power drive wheels 102 and 104. The motors and their associated transmissions or gearboxes (if any) forming a drive assembly.” *See id.*, p. 6, ll. 4-6 (Ex. 1003).

Goertzen also discloses an arm pivotably mounted to the frame at an arm pivot axis, as required by claim limitation 1(d), as well as a caster wheel coupled to the arm, as required by limitation 1(e). “Front casters 106 and 108 are attached to pivot arms 132 and 134, respectively. ... [P]ivot arms 132 and 134 are pivotally coupled

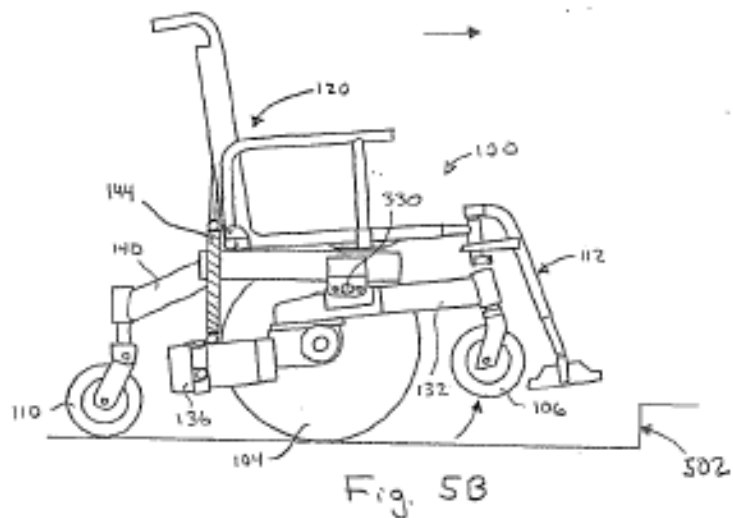


Goertzen, Figure 4A (Ex. 1003)

arms 132 and 134, respectively. ... [P]ivot arms 132 and 134 are pivotally coupled

to frame 142 for curb climbing and descending” *See id.*, p. 6, ll. 11-15 (Ex. 1003). Figure 4A shows front caster 106 attached to pivot arm 132, which is pivotally attached to frame 142 at pivot point P.

Goertzen also discloses an arm that is operatively coupled to the drive assembly such that the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel by the drive assembly so as to cause a responsive vertical movement of the caster wheel, as required by claim limitation 1(g).



Goertzen, Figure 5B (Ex. 1003)

Goertzen teaches, “Nevertheless, in Figure 5B from preferably a standstill position, drive motors 136 and 138 are ‘torqued’ so as to cause pivot arms 132 and 134 to pivot about, for example, pin or bolt 440 and raise front casters 106 and 108 off the ground. ... As shown in Figure 5B and described in connection with Figures 4A-4C, such ‘torquing’ causes pivot arms 132 and 134 to pivot about pin 330 thereby causing front casters 106 and 108 to rise.” *See id.*, p. 10, ll. 11-22 (Ex. 1003).

Figure 5B shows the front arm 132 pivoted around pivot point 330, causing front caster 106 to raise vertically off the ground. *See* Richter Decl. ¶ 52 (Ex. 1008).

Goertzen, however, does not disclose an arm pivot axis having a vertical position when the caster wheel and the drive wheel are in contact with the ground surface that is positioned relatively below a line drawn between the drive wheel axis and the rotational axis of the caster wheel. As discussed *supra* in Sections VIII.A.2.a)-VIII.A.2.c), the Low Pivot References disclose or render obvious an arm pivot axis that is below the line connecting the drive wheel axis and the caster wheel axis, as required by limitation 1(f). *See* Richter Decl. ¶ 53 (Ex. 1008).

It would have been obvious for one of ordinary skill in the art to position the pivot axis of the front arm in the Goertzen wheelchair below a line connecting the front wheel axis and the drive wheel axis, as is taught in Hosino, Mulhern ‘420, and Harakawa. A person of skill in the art would recognize that there are a limited number of design choices for the vertical position of the arm pivot axis – above the line, at the line, or below the line – and choosing one of these three options would be a routine design choice to a person of ordinary skill in the art. Doing so would be nothing more than a combination of known elements used for their known purpose and yielding predictable results. *See* Richter Decl. ¶ 54 (Ex. 1008).

In summary, the chart below identifies where the above prior art references disclose and/or make obvious the limitations of claim 1 of the ‘598 patent.

U.S. Patent 8,408,598
Petition for *Inter Partes* Review

<u>Claim 1:</u> A wheelchair comprising:	<i>See, e.g.</i> , Schaffner abstract; 5:44-54; Figs. 1, 27 (Ex. 1002); Goertzen abstract, p. 5, ll. 12-15, Fig. 1 (Ex. 1003); Hosino abstract; 1:51-55; Fig. 1 (Ex. 1004); Mulhern '420 abstract, Fig. 1 (Ex. 1005); Harakawa abstract; ¶¶ [0001], [0011]; Fig. 1 (Ex. 1006).
(a) a frame;	<i>See, e.g.</i> , Schaffner abstract; 25:33-37; Fig. 27 (Ex. 1002); Goertzen p. 2, ll. 15-17; p. 2, ll. 26-28; p. 5; ll. 21-24; p.6; l. 16; Fig. 3 (Ex. 1003); Hosino 5:19-28; Fig. 1 (Ex. 1004); Mulhern '420 abstract; ¶ [0019] (Ex. 1005); Harakawa abstract; ¶¶ [0001]; [0011], [0016], Fig. 1 (Ex. 1006).
(b) a pair of drive wheels defining a drive wheel axis;	<i>See, e.g.</i> , Schaffner abstract; 2:36-41; 5:50-54; 26:41-47; Figs. 1, 27 (Ex. 1002); Goertzen p. 2, ll. 21-22; p. 3, ll. 22-27; p. 5, ll. 13-14, Fig. 3 (Ex. 1003); Hosino abstract; 3:37-41; 7:40-42; Fig. 1 (Ex. 1004); Mulhern '420 ¶¶ [0020], [0051]; Fig. 1 (Ex. 1005); Harakawa ¶ [0017]; Fig. 1 (Ex. 1006).
(c) a drive assembly operatively coupled to at least one drive wheel of the pair of drive wheels, the drive assembly configured to rotate the at least one drive wheel about the drive wheel axis to thereby cause the wheelchair to move relative to a surface that defines a ground plane;	<i>See, e.g.</i> , Schaffner abstract, 2:41-60; 6:30-36; 8:60-66; 16:66-17:5; 23:12-17; 26:41-52; Fig. 27 (Ex. 1002); Goertzen p. 2, ll. 21-25; p. 6, ll. 4-6 (Ex. 1003); Hosino 2:5-8; 3:48-51, 55-57 (Ex. 1004); Mulhern '420 ¶ [0020] (Ex. 1005); Harakawa ¶ [0018], Fig. 1 (Ex. 1006).
(d) an arm pivotably mounted to the frame at an arm pivot axis;	<i>See, e.g.</i> , Schaffner 25:59-63; 26:33-30, Fig. 27 (Ex. 1002); Goertzen abstract; p. 2, ll. 6-8, 17-19, 28-30; p. 6, ll. 11-15; p. 7, ll. 24-26; p. 13, ll. 22-24; p. 14, ll. 14-15; Figs. 4A, 10A (Ex. 1003); Hosino 3:66-4:23; Fig. 2 (Ex. 1004); Mulhern '420 ¶¶ [0022]-

	[0023]; Figs. 3A-3B (Ex. 1005); Harakawa ¶ [0016]; Fig. 1 (Ex. 1006).
(e) a caster wheel coupled to the arm, the caster wheel defining a rotational axis about which the caster wheel rotates,	<i>See, e.g.</i> , Schaffner 9:15-17; 25:33-37; Figs. 5, 27; Goertzen abstract; p. 2, ll. 19-20; p. 2, ll. 28-29; p. 3, ll. 8-20; p. 6, ll. 11; p. 13, l. 19; Fig. 4A; claim 1 (Ex. 1003); Hosino 3:45-48; Figs. 1, 2 (Ex. 1004); Harakawa ¶ [0017]; Fig. 1 (Ex. 1006).
(f) wherein the vertical position of the arm pivot axis with respect to the ground plane when the caster wheel and the drive wheel are in contact with the surface is spaced from and positioned relatively below a straight line drawn between the drive wheel axis and the rotational axis of the caster wheel, and	<i>See, e.g.</i> , Hosino 2:36-44; 3:66-4:23; 6:50-7:9; Figs. 1-7; 9, 11 (Ex. 1004); Mulhern '420 ¶¶ [0022]-[0026]; Fig. 1 (Ex. 1005); Harakawa abstract; ¶¶ [0016]-[0017], Fig. 1 (Ex. 1006).
(g) wherein the arm is operatively coupled to the drive assembly such that the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel by the drive assembly so as to cause a responsive vertical movement of the caster wheel	<i>See, e.g.</i> , Schaffner 23:12-23; 24:42-47; 26:53-27:10 (Ex. 1002); Goertzen abstract; p. 3, ll. 12-14; p. 8, l. 25-p. 9, l. 8; p. 10, ll. 11-24; p. 16, ll. 11-26; p. 18, ll. 1-14; Figs. 5B, 11B (Ex. 1003); Hosino 6:34-49; Fig. 9 (Ex. 1004).

B. Independent Claim 7

Challenged claim 7 requires a wheelchair including: (a) a frame; (b) a pair of drive wheels defining a drive wheel axis, (c) a drive assembly operatively coupled to at least one drive wheel of the pair of drive wheels, the drive assembly configured provide power to the at least one drive wheel to rotate the drive wheel

about the drive wheel axis to thereby cause the wheelchair to move relative to a surface that defines a ground plane; (d) an arm pivotably mounted to the frame at an arm pivot axis; (e) a caster wheel coupled to the arm, the caster wheel defining a rotational axis about which the caster wheel rotates; (f) wherein the vertical position of the arm pivot axis with respect to the ground plane when the caster wheel and drive wheel are in contact with the surface is spaced from and positioned relatively below a straight line drawn between the drive wheel axis and the rotational axis of the caster wheel; and (g) wherein the arm is operatively coupled to the drive assembly such that (i) the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel by the drive, and (ii) the arm is configured to pivot about the arm pivot axis in response to braking.

Limitations 7(a) – 7(f) are identical to limitations 1(a) – 1(f); claim limitation 7(g) is the same as limitation 1(g), but adds the requirement that the arm is configured to pivot about the arm pivot axis in response to braking. All of the features of claim 7 are shown in the prior art. *See* Richter Decl. ¶ 57 (Ex. 1008).

1. Claim 7 is Unpatentable over Schaffner

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 7 is obvious in view of Schaffner.

As explained *supra* in Section VIII.A.1, Schaffner teaches all of the elements of 7(a) – 7(d), and renders obvious the caster wheel of limitation 7(e), for the same reasons it teaches the elements in claim limitations 1(a) – 1(d) and renders obvious the caster wheel limitation 7(e). (Claim limitation 7(c) contains an additional requirement that the drive assembly be configured to “provide power to the at least one drive wheel” to rotate the wheel; Schaffner teaches this requirement, as explained *supra* in Section VIII.A.1.) *See* Richter Decl. ¶ 59 (Ex. 1008).

In addition, Schaffner teaches an arm that is operatively coupled to the drive assembly such that the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel by the drive, and the arm is configured to pivot about the arm pivot axis in response to braking, as required by claim limitation 7(g). As previously discussed in Section VIII.A.1, Schaffner teaches an arm that is configured to pivot about the arm pivot axis in response to torque created rotation of the at least one drive wheel by the drive. Schaffner also discloses an arm that is configured to pivot about the arm pivot axis in response to braking: “[D]eceleration of drive wheel 16 results in the tendency of suspension member 310 to rotate in the opposite direction, namely clockwise This deceleration of drive wheels 16 causes suspension member 310 to rotate about

pivot point 84 in the direction of arrow AA in FIG. 30, causing anti-tip wheel 42 to move downwardly in FIG. 30.” *See, e.g.*, Schaffner 23:28-31, 38-41 (Ex. 1002).

Schaffner, however, does not disclose an arm pivot axis having a vertical position when the caster wheel and the drive wheel are in contact with the ground surface that is positioned relatively below a line drawn between the drive wheel axis and the rotational axis of the caster wheel, as limitation 7(f) requires. As explained *supra* in Section VIII.A.1, it would have been obvious for a person of skill in the art to adjust the vertical location of the arm pivot axis so that it was located below a line connecting the wheel axes. *See* Richter Decl. ¶ 61 (Ex. 1008). Accordingly, claim 7 is obvious over Schaffner.

2. Claim 7 is Unpatentable over Schaffner in View of Any One of the Low Pivot References

As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 7 is obvious in view of Schaffner combined with any one of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

As discussed *supra* in Section VIII.B.1, Schaffner discloses all of the limitations of claim 7 except for a caster wheel coupled to the front arm (limitation 7(e)) and a vertical position of the arm pivot axis that is located below a line drawn between the drive wheel axis and the rotational axis of the front caster wheel when the wheels are on the ground surface (limitation 7(f)). As further discussed *supra*

in Sections VIII.A.2.a)-VIII.A.2.c), these limitations are disclosed or rendered obvious by any of Hosino, Mulhern ‘420, or Harakawa (*i.e.*, the “Low Pivot References”). Accordingly, claim 7 is rendered obvious by Schaffner in view of any of the Low Pivot References. *See* Richter Decl. ¶ 63 (Ex. 1008).

3. Claim 7 is Unpatentable over Goertzen in View of Any One of the Low Pivot References

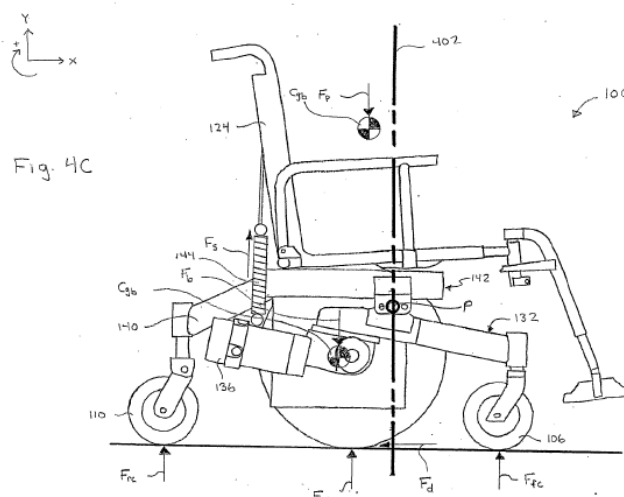
As shown in the summary chart below and in the Richter Declaration, the wheelchair of claim 7 is obvious in view of Goertzen combined with any one of the Low Pivot References (*i.e.*, Hosino, Mulhern ‘420, or Harakawa).

As explained *supra* in Section VIII.A.3, Goertzen teaches all of the elements in claim limitations 7(a) – 7(e) for the same reasons it teaches the elements in claim limitations 1(a) – 1(e), which are identical to limitations 7(a) – 7(e). (Claim limitation 7(c) contains an additional requirement that the drive assembly be configured to “provide power to the at least one drive wheel” to rotate the wheel; Goertzen teaches this requirement, as explained *supra* in Section VIII.A.3.) *See* Richter Decl. ¶ 65 (Ex. 1008). In addition, Goertzen teaches an arm that is operatively coupled to the drive assembly such that the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel by the drive, and the arm is configured to pivot about the arm pivot axis in response to braking, as required by claim limitation 7(g). As previously

discussed in Section VIII.A.3, Goertzen teaches an arm that is configured to pivot about the arm pivot axis in response to torque created rotation of the at least one drive wheel by the drive. Goertzen also discloses an arm that is configured to pivot about the arm pivot axis in response to braking:

Referring now to Figure 4C, a free body diagram illustrating the forces acting on wheelchair 100 when the wheelchair is decelerating is shown. The forces are the same as those of Figure 4A, except that a deceleration force F_d is acting on drive wheel 102 instead of an acceleration force F_a . A similar force acts on drive wheel 104. The moment generated by the deceleration force F_d causes pivot arm 132 to rotate in the same direction as the moment generated by spring force F_s , i.e., clockwise as shown. If front caster 106 is not contacting the ground, this pivot arm rotation causes front caster 106 to lower until it makes contact with the ground.

See Goertzen p. 9, ll. 9-16 (Ex. 1003). Figure 4C is reproduced below:



Goertzen, Figure 4C (Ex. 1003)

Goertzen, however, does not disclose an arm pivot axis having a vertical position when the caster wheel and the drive wheel are in contact with the ground surface that is positioned relatively below a line drawn between the drive wheel axis and the rotational axis of the caster wheel. As discussed *supra* in Sections VIII.A.2.a)-VIII.A.2.c), the Low Pivot References disclose an arm pivot axis that is below the line connecting the drive wheel axis and the caster wheel axis, as required by limitation 7(f). *See* Richter Decl. ¶ 67 (Ex. 1008). For the same reasons discussed *supra*, claim 7 is rendered obvious by Goertzen view of any one of the Low Pivot References.

In summary, the chart below identifies where the above prior art references disclose and/or make obvious the limitations of claim 7 of the '334 patent.

<u>Claim 7: A wheelchair comprising:</u>	<i>See, e.g.,</i> Schaffner abstract; 5:44-54; Figs. 1, 27 (Ex. 1002); Goertzen abstract, p. 5, ll. 12-15, Fig. 1 (Ex. 1003); Hosino abstract; 1:51-55; Fig. 1 (Ex. 1004); Mulhern '420 abstract, Fig. 1 (Ex. 1005); Harakawa abstract; ¶¶ [0001], [0011]; Fig. 1 (Ex. 1006).
(a) a frame;	<i>See, e.g.,</i> Schaffner abstract; 25:33-37; Fig. 27 (Ex. 1002); Goertzen p. 2, ll. 15-17; p. 2, ll. 26-28; p. 5; ll. 21-24; p.6; l. 16; Fig. 3 (Ex. 1003); Hosino 5:19-28; Fig. 1 (Ex. 1004); Mulhern '420 abstract; ¶ [0019] (Ex. 1005); Harakawa abstract; ¶¶ [0001]; [0011], [0016], Fig. 1 (Ex. 1006).

(b) a pair of drive wheels defining a drive wheel axis;	<i>See, e.g.,</i> Schaffner abstract; 2:36-41; 5:50-54; 26:41-47; Fig. 27 (Ex. 1002); Goertzen p. 2, ll. 21-22; p. 3, ll. 22-27; p. 5, ll. 13-14 (Ex. 1003); Hosino abstract; 7:40-42 (Ex. 1004); Mulhern '420 ¶¶[0020],[0051] (Ex. 1005); Harakawa Fig. 1 (Ex. 1006).
(c) a drive assembly operatively coupled to at least one drive wheel of the pair of drive wheels, the drive assembly configured to provide power to the at least one drive wheel to rotate the drive wheel about the drive wheel axis to thereby cause the wheelchair to move relative to a surface that defines a ground plane;	<i>See, e.g.,</i> Schaffner abstract, 2:41-60; 6:30-36; 8:60-66; 16:66-17:5; 23:12-17; 26:41-52; Fig. 27 (Ex. 1002); Goertzen p. 2, ll. 21-25; p. 6, ll. 4-6 (Ex. 1003); Hosino 2:5-8; 3:48-51, 55-57 (Ex. 1004); Mulhern '420 ¶ [0020] (Ex. 1005); Harakawa ¶ [0018], Fig. 1 (Ex. 1006).
(d) an arm pivotably mounted to the frame at an arm pivot axis;	<i>See, e.g.,</i> Schaffner 25:59-63; 26:33-30, Fig. 27 (Ex. 1002); Goertzen abstract; p. 2, ll. 6-8, 17-19, 28-30; p. 6, ll. 11-15; p. 7, ll. 24-26; p. 13, ll. 22-24; p. 14, ll. 14-15; Figs. 4A, 10A (Ex. 1003); Hosino 3:66-4:23; Fig. 2 (Ex. 1004); Mulhern '420 ¶¶ [0022]-[0023]; Figs. 3A-3B (Ex. 1005); Harakawa ¶ [0016]; Fig. 1 (Ex. 1006).
(e) a caster wheel coupled to the arm, the caster wheel defining a rotational axis about which the caster wheel rotates,	<i>See, e.g.,</i> Schaffner 9:15-17; 25:33-37; Figs. 5, 27; Goertzen abstract; p. 2, ll. 19-20; p. 2, ll. 28-29; p. 3, ll. 8-20; p. 6, ll. 11; p. 13, l. 19; Fig. 4A; claim 1 (Ex. 1003); Hosino 3:45-48; Figs. 1, 2 (Ex. 1004); Harakawa ¶ [0017]; Fig. 1 (Ex. 1006).
(f) wherein the vertical position of the arm pivot axis with respect to the ground plane when the caster wheel and the drive wheel are in contact with the surface is spaced from and positioned relatively	<i>See, e.g.,</i> Hosino 2:36-44; 3:66-4:23; 6:50-7:9; Figs. 1-7; 9, 11 (Ex. 1004); Mulhern '420 ¶¶ [0022]-[0026]; Fig. 1 (Ex. 1005); Harakawa abstract; ¶¶ [0016]-[0017], Fig. 1 (Ex. 1006).

below a straight line drawn between the drive wheel axis and the rotational axis of the caster wheel, and	
(g) wherein the arm is operatively coupled to the drive assembly such that (i) the arm is configured to pivot about the arm pivot axis in response to torque created by rotation of the at least one drive wheel by the drive, and (ii) the arm is configured to pivot about the arm pivot axis in response to braking.	<i>See, e.g.,</i> Schaffner 23:12-23, 27-41; 24:42-47, 55-60; 26:53-27:10 (Ex. 1002); Goertzen abstract; p. 3, ll. 12-14; p. 8, l. 25-p. 9, l. 8; p. 9, ll. 9-18; p. 10, ll. 11-24; p. 16, ll. 11-26; p. 16, l. 27-p. 17, l. 6; p. 18, ll. 1-14, p. 19, ll. 10-18 (Ex. 1003); Hosino 6:44-49, Fig. 9 (Ex. 1004).

C. The Dependent Claims Are Unpatentable

Each of the dependent claims discussed below is directed to subsidiary features of the claimed wheelchair, and it would be obvious to add their respective limitations to the independent claims.

1. Claims 2 and 9 are Unpatentable Over Schaffner in View of Any of the Low Pivot References, or Goertzen in View of Any of the Low Pivot References and Further in View of Either Schaffner or Clark

Claims 2 and 9 depend from independent claims 1 and 7, respectively, which as discussed *supra* are unpatentable. Claims 2 and 9 are obvious over Schaffner in view of any of the Low Pivot References, or Goertzen in view of any of the Low Pivot References and further in view of either Schaffner or Clark.

Claims 2 and 9 recite a drive assembly that is pivotally coupled to the frame at a drive assembly pivot axis that is substantially vertically aligned with the arm pivot axis. Schaffner teaches a powered wheelchair that has a drive assembly pivot axis 90 and a separate front arm

pivot axis 230, as shown in Figure

27: “This pivotal connection of the

drive motor-transmission housing

80 to frame 12 via pivotal

connection 90 of ear portion 86

with eye portion 82 provides active

independent suspension for the combination of motor 76 and transmission 78 in

housing 80, and associated drive wheel 16.” *See* Schaffner 26:47-52 (Ex. 1002).

“With this arrangement, upon an anti-tip wheel 42 encountering an obstacle or

upon wheelchair 10 pitching forwardly, anti-tip wheels 42 move arcuately,

together with U-shaped spindle 228, as they pivot about pivotal connection 230

relative to frame 12.” *See id.* 25:59-63 (Ex. 1002).

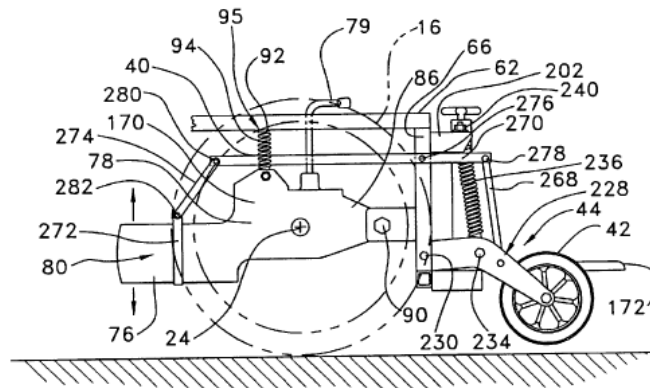


FIG. 27

Schaffner, Fig. 27 (Ex. 1002)

It would have been obvious to a person of ordinary skill in the art to arrange these pivots to be substantially vertically aligned. One of ordinary skill in the art would understand that the relative positions of pivots 90 and 230 could be modified by moving the pivot 90 forward and/or the pivot 230 rearward to suit

particular design criteria, and arranging the pivots in a substantially vertical alignment would be an obvious design choice based on a finite number of possible locations for the two pivots with a reasonable expectation of success. In *Inter Partes* Reexamination 95/002,355 of the '992 parent patent, the examiner agreed with the Third Party Requester that a person of ordinary skill in the art would understand that pivots 90 and 230 could be modified to be placed in a substantially vertical alignment, and doing so would be an obvious design choice. See 4/24/2013 Action Closing Prosecution of *Inter Partes* Reexamination Control No. 95/002,355 at 13-14.

Clark also teaches a powered wheelchair that has a drive assembly pivot axis 44 and a separate front arm pivot axis 80, as shown in Figure 2 (reproduced below). See Clark p. 6, ll. 2-8, p. 9, ll. 26-30 (Ex. 1007).

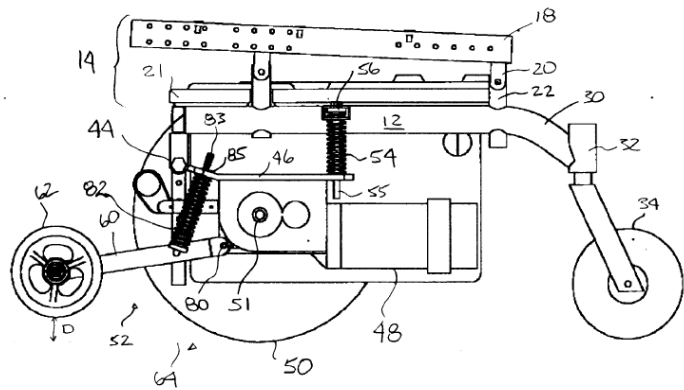


FIG 2

Clark, Figure 2 (Ex. 1007)

It would have been obvious to a person of ordinary skill in the art to arrange these pivots to be substantially vertically aligned. One of ordinary skill in the art would understand that the relative positions of pivots 44 and 80 could be modified by moving the pivot 44 rearward and/or the pivot 80 forward to suit particular

design criteria, and arranging the pivots in a substantially vertical alignment would be an obvious design choice based on a finite number of possible locations for the two pivots with a reasonable expectation of success. *See* Richter Decl. ¶ 74 (Ex. 1008).

Claims 2 and 9: The wheelchair of claim [1 or 7], wherein the drive assembly is pivotally coupled to the frame at a drive assembly pivot axis that is substantially vertically aligned with the arm pivot axis.

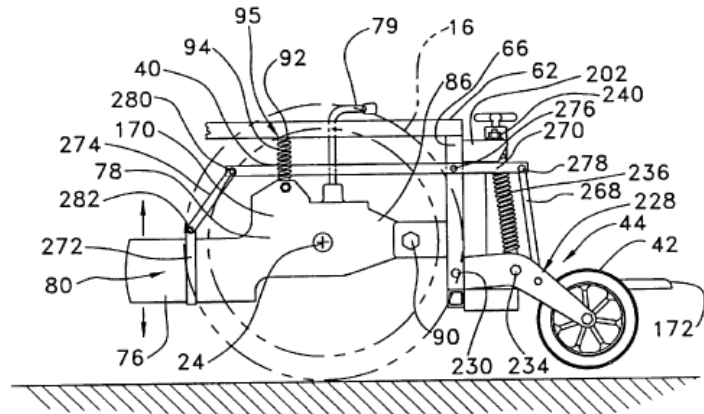
See, e.g., Schaffner 25:59-63; 26:47-52; Fig. 27 (Ex. 1002); Clark 6:2-8; 9:26-30 ; Fig. 2 (Ex. 1007).

Because wheelchairs with a drive assembly pivotally coupled to the frame at a drive assembly pivot axis and having a separate arm pivot axis were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claims 1 or 7, and to further modify it by vertically aligning the two pivot axes. *See* Richter Decl. ¶ 75 (Ex. 1008). This amounts to a routine design choice that would have a reasonable expectation of success.

Accordingly, claims 2 and 9 are not patentable.

2. **Claims 3 and 10 are Unpatentable over Schaffner in View of Any of the Low Pivot References, or Goertzen in View of Any of the Low Pivot References and Further in View of Schaffner**

Claims 3 and 10 depend from claims 2 and 9, respectively, which as discussed *supra* are unpatentable. Claims 3 and 10 are obvious over Schaffner in View of Any of the Low Pivot References, or Goertzen in View of any one of the Low Pivot References and further in view of Schaffner.

**FIG. 27****Schaffner, Figure 27 (Ex. 1002)**

Claims 3 and 10 recite a suspension link connecting the drive assembly to the arm, the suspension link operatively transferring motion of the drive assembly to the arm to cause the arm to rotate about its pivotal mounting in response to the torque created in rotation of the drive wheels. Schaffner teaches a powered wheelchair having a suspension link transferring motion of the motor 76 to the front arm 228. As shown in Figure 27, a series of links – vertical link 268, pivoting beam 270, motor link 272, and intermediate link 274 – connect together to connect motor 76 to front arm 228 : “The linkage consisting of pivoting beam 270, vertical link 268 and intermediate line 274 transfer motion between the rear end of motor/transmission housing 80 remote from pivot point 90 and forward anti-tip wheels 42, thereby accomplishing indirectly the same action/reaction of these

components to drive wheel acceleration/deceleration as accomplished by the direct connection structure illustrated in FIGS. 28 through 37.” *See* Schaffner 26:53-27:10 (Ex. 1002).

<u>Claim 3:</u> The wheelchair of claim 2, further comprising a suspension link connecting the drive assembly to the arm, the suspension link operatively transferring motion of the drive assembly to the arm to cause the arm to rotate about its pivotal mounting in response to the torque created in rotation of the drive wheels.	<i>See, e.g.,</i> Schaffner 26:53-27:10, Fig. 27 (Ex. 1002).
<u>Claim 10:</u> The wheelchair of claim 9, further comprising a suspension link connecting the drive assembly to the arm, the suspension link operatively transferring to the arm, motion of the drive assembly about its pivotal mounting in response to the torque created in rotation of the drive wheels.	<i>See, e.g.,</i> Schaffner 26:53-27:10, Fig. 27 (Ex. 1002).

Because wheelchairs with a suspension link connecting the drive assembly to the forward arm to rotate the arm around its pivotal mounting in response to torque created by rotating the drive wheels were known in the art, it would have been obvious to one of ordinary skill in the art to use such a structure in the wheelchair of claims 2 or 9. *See* Richter Decl. ¶ 78 (Ex. 1008). This amounts to a routine design choice that would have yielded predictable results. Accordingly, claims 3 and 10 are not patentable.

3. Claims 4 and 11 are Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any One of the Low Pivot References

Claims 4 and 11 depend from independent claims 1 and 7, respectively, which as discussed *supra* are unpatentable. Claims 4 and 11 are obvious over Schaffner in view of any of the Low Pivot References or Goertzen in view of any of the Low Pivot References.

Claims 4 and 11 recite a caster wheel that is a front caster wheel. Goertzen discloses a powered wheelchair having front caster wheels 106 and 108. *See, e.g.*, Goertzen p. 6, l. 11; Fig. 3 (Ex. 1003). Hosino teaches a front caster wheel 3a. *See, e.g.*, Hosino 3:45-48; Fig. 1 (Ex. 1005). Harakawa also teaches a front caster wheel 14. *See, e.g.*, Harakawa Fig. 1 (Ex. 1006). As discussed *supra* in Section VIII.A.1, it would have been obvious to use front caster wheels instead of the front anti-tip wheels as disclosed in Schaffner. *See* Richter Decl. ¶ 80 (Ex. 1008).

Claims 4 and 11: The wheelchair of claim [1 or 7], wherein the caster wheel is a front caster wheel.	<i>See, e.g.</i> , Goertzen p. 6, l. 11; Fig. 3 (Ex. 1003); Hosino 3:37-41, 45-48; 4:21-23; 6:9-13; 6:50-54; 7:3-9; 7:22 (Ex. 1005); Harakawa ¶ [0017], Fig. 1 (Ex. 1006).
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Because wheelchairs with front caster wheels were known in the art, it would have been obvious to one of ordinary skill in the art to use a front caster wheel in the wheelchair of claims 1 or 7. *See* Richter Decl. ¶ 81 (Ex. 1008). This

would have been a combination of old elements yielding nothing but predictable results. Accordingly, claims 4 and 11 are not patentable.

4. Claims 5 and 12 are Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any of the Low Pivot References

Claims 5 and 12 depend from independent claims 1 and 7, respectively, which as discussed *supra* are unpatentable. Claims 5 and 12 are obvious over Schaffner in view of any of the Low Pivot References or Goertzen in view of any one of the Low Pivot References.

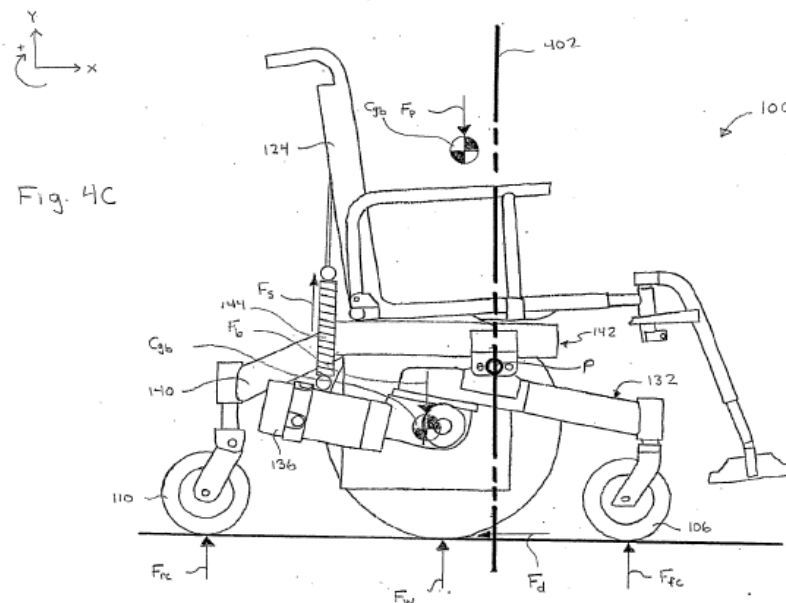
Claims 5 and 12 recite an arm that is configured to pivot about the arm pivot axis in response to braking so as to cause the caster wheel to apply a force to the surface. Schaffner discloses an arm that is configured to pivot about the arm pivot axis in response to braking: “[D]eceleration of drive wheel 16 results in the tendency of suspension member 310 to rotate in the opposite direction, namely clockwise This deceleration of drive wheels 16 causes suspension member 310 to rotate about pivot point 84 in the direction of arrow AA in FIG. 30, causing anti-tip wheel 42 to move downwardly in FIG. 30.” *See, e.g.*, Schaffner 23:28-31, 38-41 (Ex. 1002). Schaffner also teaches a downward force applied to the front wheels during deceleration: “As the rear of suspension member 310 rises during deceleration, this exerts downward force on anti-tip wheels 42 which effectively

increases the anti-tip force provided by spring 236.” *See, e.g., id.* 24:57-60 (Ex. 1002).

Goertzen also teaches a powered wheelchair with a front arm that is configured to pivot about the pivot axis in response to deceleration so as to cause the caster wheel to apply a force to the surface:

Referring now to Figure 4C, a free body diagram illustrating the forces acting on wheelchair 100 when the wheelchair is decelerating is shown. The forces are the same as those of Figure 4A, except that a deceleration force F_d is acting on drive wheel 102 instead of an acceleration force F_a . A similar force acts on drive wheel 104. The moment generated by the deceleration force F_d causes pivot arm 132 to rotate in the same direction as the moment generated by spring force F_s , i.e., clockwise as shown. If front caster 106 is not contacting the ground, this pivot arm rotation causes front caster 106 to lower until it makes contact with the ground. If front caster 106 is already contacting the ground, then no further movement of front caster 106 is possible. Hence, when wheelchair 100 decelerates, front caster 106 is **urged towards the ground.**”

See Goertzen p. 9, ll. 9-18 (Ex. 1003) (emphasis added). Figure 4C is reproduced below:



Goertzen, Figure 4C (Ex. 1003)

Claims 5 and 12: The wheelchair of claim [1 or 7], wherein the arm is configured to pivot about the arm pivot axis in response to braking [torque] so as to cause the caster wheel to apply a force to the surface.

See, e.g., Schaffner 23:28-31, 38-41; 24:57-60 (Ex. 1002); Goertzen p. 9, ll. 9-18; p. 16, l. 27-p. 17, l. 6; Fig. 4C (Ex. 1003).

Because wheelchairs with arms configured to pivot about the arm pivot axis in response to braking so as to cause the caster wheel to apply a force to the surface were known in the art, it would have been obvious to one of ordinary skill in the art to use a front caster wheel in the wheelchair of claims 1 or 7. *See* Richter Decl. ¶ 85 (Ex. 1008). This would have been a combination of old elements yielding nothing but predictable results. Accordingly, claims 5 and 12 are not patentable.

5. Claims 6 and 13 are Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any One of the Low Pivot References

Claims 6 and 13 depend from independent claims 1 and 7, respectively, which as discussed *supra* are unpatentable. Claims 6 and 13 are obvious over Schaffner in view of any of the Low Pivot References or Goertzen in view of any one of the Low Pivot References.

Claims 6 and 13 recite an arm that is configured to pivot about the arm pivot axis to enable the caster wheel to move downwardly and engage a surface that is lower than the ground plane in response to braking. Schaffner teaches a wheelchair where the front arm pivots to enable the front anti-tip wheels to engage a surface that is lower than the ground plane:

This deceleration of drive wheels 16 causes suspension member 310 to rotate about pivot point 84 in the direction of arrow AA in FIG. 30, causing anti-tip wheel 42 to move downwardly in FIG. 30. As a result, power wheelchair 10 desirably makes contact with lower path 326 prior to drive wheel 16 reaching edge 322 separating raised path 324 from lower path 326. This permits power wheelchair 10 to travel over drop-offs and curbs, such as represented by edge 322, of substantially greater height than otherwise possible.

See, e.g., Schaffner 23:38-47, Fig. 30 (Ex. 1002).

Goertzen also teaches a powered wheelchair where the arm pivots about the arm pivot axis to enable the front caster wheel to engage a surface that is lower than the ground plane:

In Figure 6B, front casters 106 and 108 have gone over curb 602 and are in contact with the new lower elevation. As front casters 106 and 108 go over the curb or obstacle 602, they are urged downward toward the new lower elevation by the force generated by springs 144 and 146.

See Goertzen p. 11, ll. 18-22 (Ex. 1003). As explained above in Section VIII.B.1, Goertzen further teaches an arm that pivots around the arm pivot axis to cause the caster wheel to move downwardly in response to braking. *See* Goertzen p. 9, ll. 9-16 (Ex. 1003).

<p>Claims 6 and 13: The wheelchair of claim [1 or 7], wherein the [suspension] arm is configured to pivot about the [suspension] arm pivot axis to enable the caster wheel to move downwardly and engage a surface that is lower than the ground plane in response to braking.</p>	<p><i>See, e.g.,</i> Schaffner 23:38-47, Fig. 30 (Ex. 1002); Goertzen p. 9, ll. 9-16; p. 11, ll. 18-22; p. 16, l. 27-p. 17, l. 6 (Ex. 1003).</p>
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Because wheelchairs with arms configured to pivot about the arm pivot axis to enable the caster wheel to move downwardly and engage a surface lower than the ground plane were known in the art, it would have been obvious to one of ordinary skill in the art to include such arms in the wheelchair of claims 1 or 7. *See* Richter Decl. ¶ 89 (Ex. 1008). This would have been a combination of known

elements yielding nothing but predictable results. Accordingly, claims 6 and 13 are not patentable.

6. Claim 8 is Unpatentable over Schaffner in View of Any of the Low Pivot References or Goertzen in View of Any of the Low Pivot References

Claim 8 depends from independent claim 7, which as discussed *supra* is unpatentable. Claim 8 is obvious over Schaffner in view of any of the Low Pivot References or Goertzen in view of any one of the Low Pivot References.

Claim 8 recites a caster wheel that is a front caster wheel and an arm that is configured to pivot about the arm pivot axis in response to torque created by forward rotation of the at least one drive wheel so as to cause a responsive vertically upward movement of the caster wheel. As discussed above in Section VIII.C.3, Goertzen, Hosino, and Harakawa all disclose front caster wheels. As further discussed above in Sections VIII.A.1 and VIII.A.3 respectively, Schaffner and Goertzen disclose a front arm that pivots about the arm pivot axis in response to torque created by forward rotation of the drive wheels so as to cause a vertically upward movement of the front wheels.

Claim 8: The wheelchair of claim 7, wherein the caster wheel is a front caster wheel and the arm is configured to pivot about the arm pivot axis in response to torque created by forward rotation of the at least one drive wheel by the drive assembly so as to cause a responsive

See, e.g., Schaffner 10:1-7; 23:12-23; 24:42-47; 26:53-27:10; Fig. 1 (Ex. 1002); Goertzen p. 2, ll. 22-25; p. 3, ll. 7-12; p. 8, l. 23-p. 9, l. 8; p. 16, ll. 11-26; (Ex. 1003); Hosino 3:37-41,45-48; 4:21-23; 6:9-13; 6:50-54; 7:3-9; 7:22 (Ex.

U.S. Patent 8,408,598
Petition for *Inter Partes* Review

vertically upward movement of the caster wheel.	1005); Harakawa ¶ [0017], Fig. 1 (Ex. 1006).
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Because wheelchairs with front caster wheels and arms that are configured to pivot about the pivot axis in response to torque created by the drive wheel so as to vertically raise the front caster wheels were known in the art, it would have been obvious to one of ordinary skill in the art to include such front caster wheels and front arms in the wheelchair of claim 7. *See* Richter Decl. ¶ 92 (Ex. 1008). This would have been a combination of old elements yielding nothing but predictable results. Accordingly, claim 8 is not patentable.

Based on the foregoing, claims 1-13 of the '598 patent recite subject matter that is obvious. The Petitioner requests institution of an *inter partes* review to cancel those claims.

Respectfully submitted,

Permobil, Inc.,
Petitioner

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U.S. Patent 8,408,598
Petition for *Inter Partes* Review

CERTIFICATE OF SERVICE

I hereby certify that, on July 1, 2013, I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent No. 8,408,598 Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104
- Exhibits 1001-1014
- List of Exhibits for Petition for *Inter Partes* Review of U.S. Patent No. 8,408,598 (Exhibits 1001-1014)
- Fee Authorization
- Power of Attorney

to be served via Federal Express on the following attorney of record as listed on PAIR:

Gary H. Levin
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Philadelphia, PA 19104-2891

/David L. Cavanaugh/

David L. Cavanaugh

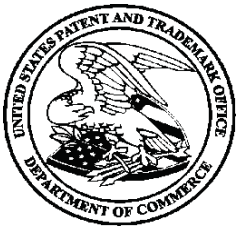
Registration No. 36,476

U.S. Patent 8,408,598
Petition for *Inter Partes* Review

LIST OF EXHIBITS FOR
PETITION FOR INTER PARTES REVIEW OF
U.S. PATENT NO. 8,408,598

<u>Exhibit</u>	<u>Description</u>
1001	U.S. Patent No. 8,408,598, entitled “Anti-Tip System For a Power Wheelchair,” to Mulhern <i>et al.</i> , issued Apr. 2, 2013.
1002	U.S. Patent No. 6,129,165, entitled “Curb-Climbing Power Wheelchair” to Schaffner <i>et al.</i> , issued Oct. 10, 2000 (“Schaffner”)
1003	PCT Publication No. WO 02/34190, entitled “Obstacle Traversing Wheelchair” to Goertzen, published May 2, 2002 (“Goertzen”)
1004	U.S. Patent No. 6,454,286, entitled “Traveling Device For Smooth and Stable Movement On Uneven and Inclined Surfaces,” to Hosino, issued Sept. 24, 2002. (“Hosino”)
1005	U.S. Patent Application Publication No. 2003/0205420, entitled “Active Anti-Tip System For Power Wheelchairs,” to Mulhern <i>et al.</i> , published Apr. 14, 2005. (“Mulhern ‘420”)
1006	Japanese Patent Application Publication No. JP 2001104391, entitled “Wheelchair,” to Harakawa, published Apr. 17, 2001. (“Harakawa”)
1007	Canadian Patent Application No. 2,254,372, entitled “Motorized Wheelchair,” to Clark <i>et al.</i> , published May 17, 2000 (“Clark”).
1008	Declaration of W. Mark Richter, Ph.D.
1009	U.S. Patent No. 8,181,992, entitled “Anti-Tip System For a Power Wheelchair,” to Mulhern <i>et al.</i> , issued May 22, 2012.
1010	File History of U.S. Patent No. 8,181,992 Reexamination, 4/24/2013 Action Closing Prosecution
1011	U.S. Patent No. 8,408,598 File History, 11/5/12 Amendment
1012	U.S. Patent No. 8,408,598 File History, 6/15/12 Non-Final Office Action
1013	U.S. Patent No. 8,408,598 File History, 12/21/12 Office Action
1014	U.S. Patent No. 8,408,598 File History, 2/4/13 Reply to Office Action

Exhibit 2



United States Patent and Trademark Office

Commissioner for Patents
 United States Patent and Trademark Office
 P.O. Box 1450
 Alexandria, VA 22313-1450
www.uspto.gov

Inter Partes Reexamination Filing Data - September 30, 2012

1. Total requests filed since start of <i>inter partes</i> reexam on 11/29/99.....	1919	
2. Number of Filings by dicipline		
a. Chemical Operation	350	18%
b. Electrical Operation	985	51%
c. Mechanical Operation	564	29%
d. Design Patents	20	1%
3. Annual <i>Inter Partes</i> Reexam Filings		
Fiscal Yr. No Fiscal Yr. No Fiscal Yr. No Fiscal Yr. No		
2000 0 2004 27 2008 168 2012 530		
2001 1 2005 59 2009 258		
2002 4 2006 70 2010 281		
2003 21 2007 126 2011 374		
4. Number known to be in litigation.....	1272	66%
5. Decisions on requests.....	1789	
a. No. granted.....	1682	94%
(1) By examiner	1673	
(2) By Director (on petition)	9	
b. No. denied.....	107	6%
(1) By examiner	101	
(2) Reexam vacated	6	
6. Overall reexamination pendency (Filing date to certificate issue date)		
a. Average pendency	39.5 (mos.)	
b. Median pendency	34.1 (mos.)	
7. Total <i>Inter partes</i> reexamination certificates issued (1999 – present)	398	
a. Certificates with all claims confirmed	44	11%
b. Certificates with all claims canceled (or disclaimed)	169	42%
c. Certificates with claims changes	160	40%

Exhibit 3

PATENT AND TRADEMARK OFFICE
Process Production Report
Preliminary Report

	FY2012 Actual	FY2013 Oct.	FY2013 Nov.	FY2013 Dec.	FY2013 Jan.	FY2013 Feb.	FY2013 Mar.	FY2013 Apr.	FY2013 May	FY2013 Jun.	FY2013 Jul.	FY2013 Aug.	FY2013 Sep.	FY2013 Actual
Patent Trial & Appeal Board														
CONTESTED CASES														
Inter Partes Review														
Petitions Filed														
Monthly		24	24	32	24	30	38	27	45					
Year-to-date	17	41	65	97	121	151	189	216	261	261	261	261	261	261
Trials Instituted														
Monthly		0	0	1	3	10	22	13	37					
Year-to-date	0	0	0	1	4	14	36	49	86	86	86	86	86	86
Trials Not Instituted														
Monthly		0	0	0	0	2	0	4	2					
Year-to-date	0	0	0	0	0	2	2	6	8	8	8	8	8	8
Cases Disposed														
Monthly		0	0	0	0	1	2	0	3					
Year-to-date	0	0	0	0	0	1	3	3	6	6	6	6	6	6
Cases Pending														
Year-to-date	17	41	65	97	121	148	184	207	247	247	247	247	247	247
Transitional Program for Covered Business Method														
Petitions Filed														
Monthly		5	2	0	0	0	2	4	7					
Year-to-date	8	13	15	15	15	15	17	21	28	28	28	28	28	28
Trials Instituted														
Monthly		0	0	0	5	3	4	0	0					
Year-to-date	0	0	0	0	5	8	12	12	12	12	12	12	12	12
Trials Not Instituted														
Monthly		0	0	0	0	2	1	0	0					
Year-to-date	0	0	0	0	0	2	3	3	3	3	3	3	3	3
Cases Disposed														
Monthly		0	0	0	0	0	0	0	0					
Year-to-date	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cases Pending														
Year-to-date	8	13	15	15	15	13	14	18	25	25	25	25	25	25

PATENT AND TRADEMARK OFFICE
Process Production Report
Preliminary Report

	FY2012 Actual	FY2013 Oct.	FY2013 Nov.	FY2013 Dec.	FY2013 Jan.	FY2013 Feb.	FY2013 Mar.	FY2013 Apr.	FY2013 May	FY2013 Jun.	FY2013 Jul.	FY2013 Aug.	FY2013 Sep.	FY2013 Actual
Patent Trial & Appeal Board														
Interferences														
Cases Declared														
Monthly		3	2	1	3	1	4	11	6					
Year-to-date	56	3	5	6	9	10	14	25	31	31	31	31	31	31
Cases Disposed														
Monthly		10	8	4	3	1	2	6	2					
Year-to-date	62	10	18	22	25	26	28	34	36	36	36	36	36	36
Cases Pending														
Year-to-date	53	46	40	37	37	37	39	44	48	48	48	48	48	48
Ex Parte Reexams Appeals														
Cases Received														
Monthly		10	11	5	13	7	4	7	11					
Year-to-date	115	10	21	26	39	46	50	57	68	68	68	68	68	68
Cases Disposed														
Monthly		2	12	13	7	7	11	11	13					
Year-to-date	119	2	14	27	34	41	52	63	76	76	76	76	76	76
Cases Pending														
Year-to-date	22	30	29	21	27	27	20	16	14	14	14	14	14	14
Inter Partes Reexam Appeals														
Cases Received														
Monthly		29	10	7	19	17	16	10	18					
Year-to-date	162	29	39	46	65	82	98	108	126	126	126	126	126	126
Cases Disposed														
Monthly		10	17	13	17	10	10	10	21					
Year-to-date	149	10	27	40	57	67	77	87	108	108	108	108	108	108
Cases Pending														
Year-to-date	64	83	76	70	72	79	85	85	82	82	82	82	82	82
<u>EX PARTE APPEALS</u>														
Ex Parte Appeals*														
Cases Received														
Monthly		1083	826	791	998	997	644	1173	821	0	0	0	0	
Year-to-date	12433	1083	1909	2700	3698	4695	5339	6512	7333	7333	7333	7333	7333	7333
Cases Disposed														
Monthly		819	941	889	1059	1012	1199	948	931	0	0	0	0	
Year-to-date	9912	819	1760	2649	3708	4720	5919	6867	7798	7798	7798	7798	7798	7798
Cases Pending														
Year-to-date	26484	26748	26633	26535	26474	26459	25904	26129	26019	26019	26019	26019	26019	26019

*Ex parte appeals of applications for patents, not including ex parte reexamination or inter partes reexamination appeals.